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The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipeline industry
PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

LOOKING AHEAD
. . . with the Editor

A METHOD for determining oil and water saturations simultaneously by an extraction distillation method which is both accurate and rapid, and has the further advantage of cleaning core samples for use in porosity and permeability tests, will be described in an article to be published soon. The extraction apparatus is made of Pyrex glass and is fitted with standard taper ground glass joints.

THE OIL MAN'S CALENDAR

MAR.	
21–23	American Association of Petroleum Geologists, Society of Exploration Geophysicists and Society of Economic Paleontologists and Mineralogists, Baker Hotel, Dallas.
22–23	Southern Gas Association, Roosevelt Hotel, New Orleans
23	Spring Meeting Pacific Coast District API, Biltmore Hotel, Los Angeles.
APRIL	
3 –4	Interstate Oil Compact Commission, Quarterly Meeting, Roosevelt Hotel, New Orleans.
10–12	National Association of Corrosion Engineers, Annual Meeting, Rice Hotel, Houston.
12–14	Natural Gasoline Association of America, Baker Hotel, Dallas.
13–14	American Petroleum Institute, Eastern District, Division of Production, Deshler-Wallick Hotel, Columbus, Ohio.
20–21	National Petroleum Association, Semi-annual Meeting, Cleveland Hotel, Cleveland.
24–25	National Oil Scouts and Landmen's Association, Hotel Adolphus, Dallas.
May	
8–10	Regional Meeting, American Institute of Mining and Metallurgical Engineers, including Petroleum Division, Rice Hotel, Houston.
8–10	National Oil and Gas Power Conference (Oil and Gas Division, Power Division) ASME, Tulsa.
25–26	Spring Meeting, Mid-Continent District, API, Division of Production, Mayo Hotel, Tulsa.
OCT.	
12–13	Texas Mid-Continent Oil & Gas Association, Houston.
NOV.	
13–16	American Petroleum Institute, Stevens Hotel, Chicago.

THE OIL WEEKLY

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The Changing Panorama

Enemies, Too, Within Our Own Borders!

AMERICAN newspapers told Wednesday of 250 aircraft workmen rioting in the Ford bomber plant at River Rouge apparently in protest against the discharge of one man for striking a foreman, and of others for smoking within a restricted area. The same papers told of the loss of 68 American heavy bombers over Berlin.

Within two to three weeks the families of nearly 700 American bomber officers and crewmen will receive from the War Department telegrams beginning "we regret to advise you," and hundreds of these families within the next two months will receive a further telegram advising of the death of sons, husbands and brothers.

We **know** how those nearly 700 families will feel. We know that most of them will feel that those striking workmen were as much the enemies of their sons as the Nazi fliers or ground crews who shot them down. Many of our fliers who are risking their lives over hostile lands will not come back. But their ground-crew buddies, and their comrades who do come back, and the families of those who are lost will not forget.

May God damn to the bottomless pits of hell any one who obstructs the effort to eradicate our enemies abroad.

Should Oppose Bad Trends in Government

AT a session of the Second War Congress of American Industry, held last December, William Green, president of the American Federation of Labor, taking part in a panel discussion of "Jobs in Peacetime," remarked: "Surely we are not developing permanent policies out of our experience in an emergency."

The statement voices a fundamental of good government which is suffering abuse in many quarters. Trying to extend war-born policies forward into peacetime life is responsible for much of our present confusion in public affairs, and has undoubtedly caused loss of confidence between our people and many government leaders.

The petroleum industry has shown determination in facing such tendencies in government agencies dealing with oil. However, there is question of whether the opposing front is as strong as it should be. There are signs of indifference. Part of the industry either has no feelings on the subject or if it does, it is unwilling to voice them.

There is nothing unpatriotic in opposing bad trends in government during wartime. On the contrary, it is during critical periods when demagogues have the chance of doing their most effective work. Then it becomes the sacred duty of citizens to increase their interest in government. The unpatriotic thing to do is to sit idly by while deadly fallacies permeate government until the structure is weakened.

If we at home fall down on fighting to keep the American way of life for the children of our men who are dying in strange lands, there is no hope for us under any circumstances. We must keep our government clear of rubbish so that when the war is won peacetime policies may not be smothered by an accumulation of foolishness perpetrated under the guise of "emergency."

Pogue Favors World Oil Compact

OUR government should take the leadership in promoting measures of international consultation and collaboration concerning world oil developments, at the outset with Great Britain and the Soviet Union, and later on with all peaceful nations, ultimately implementing some international agency to maintain the undertaking," Joseph E. Pogue, vice president of the Chase National Bank says, in an article appearing in the current *Atlantic Monthly*.

Elaborating a suggestion made in November by oil industry leaders that an international oil compact be formed, Pogue proposes objectives as follows: efficient and orderly development of the world's oil resources; prudent conservation of the world's oil reserves; equitable distribution of oil to the peoples of all nations; and avoidance of national restrictions imposed as artificial aids to the production of substitute products.

The article points out that the successful operation of the Interstate Oil Compact in the United States has brought "economic stability to a formerly highly cyclical industry," and that without the existing structure of the interstate compact "it seems doubtful whether our oil supply could have been effectively marshalled for the prosecution of the war."

Pogue is definitely opposed to any governmental participation in the ownership or development of foreign oil reserves that would "retard further progress of our nationals abroad, endanger our Good-Neighbor policy, and lead to endless political complications."

A vast crude-oil-storage program he condemned as impractical, aside from being costly. To build up a three-year supply in storage, he pointed out, would require the full use of both the Big-Inch and Little-Big-Inch lines for 25 years, merely to transport such a volume to storage depots.

As to the concept of national reserves by shut-downs of certain major fields, he held that such a program would not satisfactorily answer requirements, since, by experience with restricted naval reserves we find that present total production from naval oil lands amounts to less than 10,000 barrels per day.

Pogue called for an oil policy encompassing three objectives: national prosperity, national security, and world peace. "To gain these ends we must substitute a positive expansionist policy for our present negative restrictionist approach. We need a policy that will shift the focus away from the inevitability of a third world war to those measures most likely to prevent such a catastrophe."

Cars and Planes May Use Same Fuel

DUAL-PURPOSE gasoline, capable of powering both airplanes and automobiles, is predicted as an immediate postwar development by Thomas H. Risk, Ethyl Corporation technologist. Having an octane rating of from 85 to 88 the postwar fuel will possess antiknock qualities far superior to the best prewar aviation grade gasolines, according to this research specialist. This super gasoline will have more real quality than its octane rating indicates, due to recent advances in the techniques of improving chemical composition of the fuel, refining processes and the creation of better blending stocks. Motors for both planes and cars will also be designed to utilize more fully the latent power of the new standardized fuel.

Use of flowmeters on one pipe line showed that a reduction of 5 pounds in the backpressure held on centrifugals to insure filling would increase the throughput of the line by 5 percent, with no additional power outlay, and with lessened wear on regulating equipment.

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EDITORIAL COMMENT

NEEDED . . . Real Diplomacy

By
RAY L. DUDLEY
Publisher

A GENUINE fear prevails in the minds of many thinking and informed people that the Near East oil question, unless ably handled by our government, may lead to a dangerous rift between the United States and our allies, the British. The question is so important to the national interests of both allies that it deserves the attention of and quick solution by the duly constituted leaders of both governments. Thus far, some allege, dealings have been conducted in a manner to lead to trouble, rather than to prevent it.

Britain, we are told, fearful of her postwar petroleum position, has continued an attitude toward the participation of American nationals in her zones of interest reminiscent of the days following World War I. The net result, we are told, is the withholding of rights to American nationals which this country has granted to British nationals not only in "spheres of American interest" (if claim can be laid to such spheres, which is doubtful) but within the United States itself.

The physical facts appear to be, with reference to the Near East, that British interests wish allocation of American materials, etc., for a pipe line capable of moving Iranian and other British oil to European markets while denying American interests the right to lay pipe lines across British mandated territory to the same markets. Back of the whole thing is an appreciation of the tremendous reserves of crude oil in the Near East, and a feeling that British authorities are not playing fair.

The foregoing seems to present the American position, or rather American belief, as to what the situation is.

Neither the American nor the British people need these reserves desperately at this moment, but when our declining reserves reach a point which can be reasonably guessed right now, America will need them in addition to reserves in other parts of the world. When United States oil must be supplemented by foreign oil to meet our domestic need, the average American will feel it keenly if any power, be it an ally or an enemy, operates to restrict the flow of oil from American-owned properties. And the average American will prefer to have his oil produced by his own nationals rather than by a foreign company or government. This is a natural feeling on our part and we must not object if the British take a similar stand.

During two wars American oil has helped England when she desperately needed it. No Britisher will deny the value of that oil in the hour of his country's need. If some British say that they paid a high price for it, let them be reminded that actually (remembering War I debts owed the United States) they paid for but little of it—and in this war we have lend-leased it, whatever that ultimately brings the American taxpayer. If they think that the price was too high, let them remember that our own oil used in fighting War I came at high cost to the American government and consumer. Adding a further thought, we do not forget the price we have paid for British-owned rubber during many periods of the past three decades.

But, if friendliness is to be the basis of our future dealings, we can do better by reminding ourselves of the close ties and of the many acts of practical friendship between these two nations—acts, some of them so recent as to be in actual performance this moment.

The blood of too many American boys has been shed along with their British comrades to allow fumbling diplomacy to rob us of a clear view of what is fair, what is right, and what will cement rather than destroy our mutual friendship.

We shall need oil to replace our own reserves, much of which we have shipped abroad. We shall need oil for our peacetime as well as wartime economy. Great Britain shall need oil, too. One cannot blame her for striving for her own security, nor for wanting a plentiful supply of oil, at a low price, during peace or war. Certainly it is to her interest to promote the affairs of her nationals in trade. But it also is to our interest to promote the affairs of our nationals in trade. Where would we be in the present war if our nationals had not developed oil fields throughout the world?

Does it necessarily follow that these interests shall be so antagonistic as to create international resentment and attempts at isolation? In the United States, Shell, at least formerly, a predominantly British-controlled company, has been welcomed, and has proven itself a splendid and honorable addition to those companies sharing our domestic production and market, and let us add, sharing in our national defense as well. Is there then a reason why, in the operation of mandates in British-controlled territory, American interests should be blocked, thwarted and, by semi-official action, eliminated from competition?

Other than Russia, which has hitherto confined her oil operations to her own rich deposits, only three nations—the United States, Great Britain and the Netherlands—have actively engaged in oil exploration and production outside their own boundaries. And of these the United States and England have been leaders—the Americans ahead, with our British friends slowly closing the gap.

British interests have had the support of a cooperative and usually intelligent home government whereas American companies frequently have operated despite an unfriendly and certainly an unintelligent governmental attitude. Now we come to a point where the American government apparently sees that oil is so important that an about-face in foreign oil policy is imperative.

We maintain that the petroleum world is sufficiently large to permit these two big, but friendly, antagonists to carry on the job of supplying oil to its consumers throughout the globe without damage to the security of their respective countries, and without resorting to attempts by either to destroy the other.

Logically, British companies will have their best chance to sell their product where ties are closest. The same thing applies to American companies. If either breaks into the markets of the other, it likely will mean the buyer will profit.

The world is tired of war, the world is tired of contention, the world is tired of seeing the causes of war nurtured. The mutual interests of America and Britain require that this question of oil—oil anywhere—be settled promptly. The British would not feel kindly about a settlement that was obviously unfair to British interests; Americans likewise would resent a settlement which was unfair to American interests.

There is so much common ground on which a settlement can be reached, that we hope practical steps are taken to produce it. Mr. Roosevelt and Mr. Churchill could settle this matter quickly—and we believe fairly. If it is not settled the consequences may be more grave than many Americans and many Englishmen appreciate.

Industry Handicapped in Meeting Record Demand for Products

Manpower and material allowance not sufficient for huge exploration program scheduled; demand for all oils first two months 1944 shows 15 percent gain over 1943; imports by United States are not unlikely

By L. J. LOGAN, Associate Editor

IN LINE with expectations, the industry is encountering record-breaking demand for its products this year; and being handicapped by shortages of manpower and materials, it is having difficulty in meeting the extraordinary requirements. For meeting these unprecedented needs altogether satisfactory, the industry would have to be in position to expand its work and activity generally, whereas under wartime hindrances it has to go along in many of its functions on a subnormal basis. All urgent needs for oils have been supplied up to now, but the industry's job grows increasingly difficult, and more definite shortages than those of the past are threatened for the future.

The industry's principal basic problem of today is that of adequate crude oil from which to make the enormous quantities of products that the nation needs, and this problem has international as well as domestic implications. The United States in the immediate future and perhaps for an extended period may have to import comparatively large volumes of foreign oils to supplement all that can be produced within the country. Furthermore, unless the nation is to become increasingly and heavily dependent upon foreign oils, it will have to promptly intensify development of its own petroleum resources.

Substantial expansion of exploration for new fields and development of existing fields is scheduled for this year, under allocations of more materials and liberalizing of regulations. But in its planning the government has not made sufficient allowance for the great amount of work that the oil industry will have to do henceforth, and the great amount of manpower and materials that it will need, if it is to be able to supply the enormous volumes of oils required.

1943 Runs Record-Breaking

In spite of numerous handicaps, including the necessity for holding drilling far below normal, the industry in 1943 supplied unprecedented requirements for petroleum by producing and running to stills record-breaking volumes of crude oil. But the demand for petroleum is running sharply higher this year than last year, and again in 1944 it will be necessary to produce and process petroleum in record-breaking volume.

The enormous rates at which operations must be carried on are emphasized by available statistics on operations in the first two months of this year, although the statistical panorama is blurred a little by censorship of data on import and export movements of oils.

In the first 2 months of 1944, the total demand for all oils averaged 4,722,000 barrels daily, which was 15 percent more than the average daily total demand of 4,113,000 barrels in January and February of last year, not considering imports in either year. Imports are generally known to be running substantially higher this year than last year, and therefore this year's total needs actually have been somewhat more than 15 percent greater than those of last year. These figures give effect to the extra day in February this year, and in terms of total number of barrels involved, the increase for the first two months of this year was 18 percent, the total demand for all oils having been 283,238,000 barrels against 239,646,000. In these first 2 months of 1944 the nation used more petroleum than it did in the whole year 1915, second year of the first World War; and in the 2½ months from January 1 to now, the use has been equivalent to the whole year's needs in 1918.

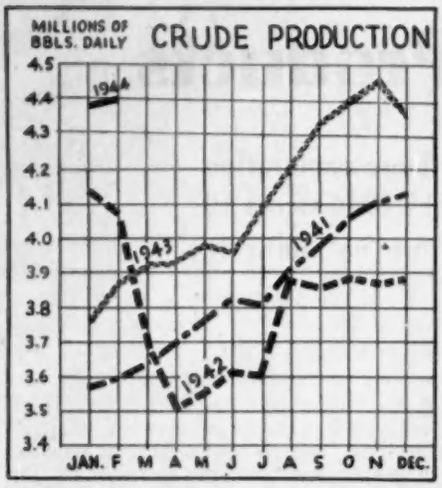
In meeting these enormous requirements, the oil fields of the United States itself have borne the great bulk of the

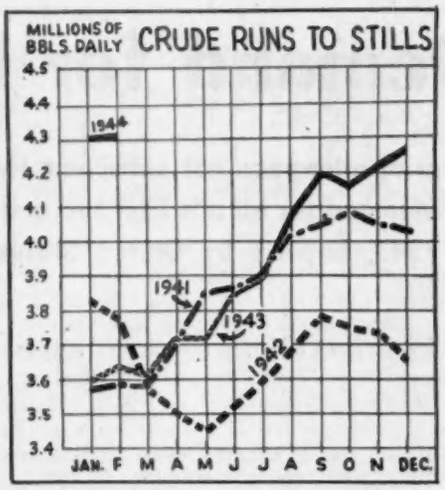
United States Crude Oil Production
Based on Data of U. S. Bureau of Mines
(Thousands of Barrels)

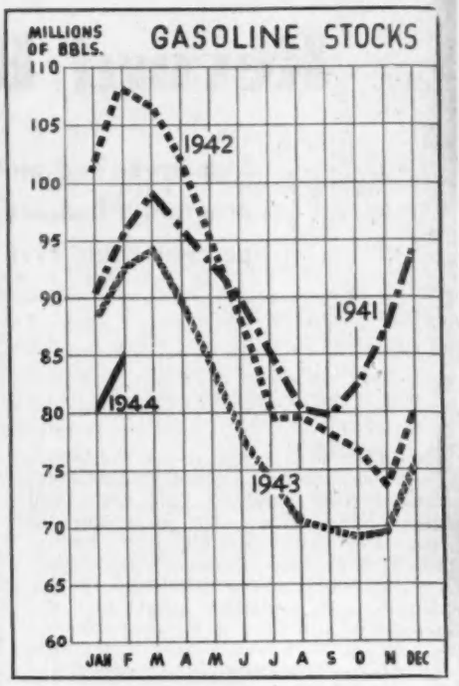
State or District	WARTIME FLUCTUATIONS IN DAILY AVERAGE CRUDE OIL PRODUCTION						TOTAL PRODUCTION OF CRUDE OIL				
	Peak Before U. S. Entry in War Dec., 1941	Low After U. S. Entry in War April, 1942	February				February		First 2 Months		
			1942	1943	1944	Percent Change '43-'44	1943	1944	1943	1944	Percent Change
Alabama	.....	.....	.....	.....	.03	+100.0	.....	1	.....	1	+.....
Arkansas	74.3	71.6	74.0	75.5	78.8	+ 4.4	2,113	2,285	4,404	4,732	+ 7.4
California	631.9	637.5	648.0	771.9	802.8	+ 4.0	21,613	23,281	45,299	47,940	+ 5.8
San Joaquin Val.	261.3	269.7	285.0	356.6	376.5	+ 5.6	9,984	10,919	20,773	22,484	+ 8.2
Coastal District	87.4	72.3	71.9	107.9	121.2	+ 12.3	3,021	3,515	6,385	7,239	+ 13.4
L. A. Basin	283.2	295.5	291.1	307.4	305.1	— 0.7	8,608	8,847	14,141	18,217	+ 28.8
Colorado	6.1	5.7	5.2	5.6	7.8	+ 39.3	158	222	356	453	— 6.6
Florida	.....	.....	.....	.....	.05	+100.0	.....	2	.....	8	+.....
Illinois	397.8	301.6	350.8	240.0	209.2	— 12.8	6,720	6,066	14,121	12,589	— 10.8
Indiana	18.6	19.8	16.8	15.8	13.3	— 15.8	441	386	923	787	+ 14.7
Kansas	256.7	249.8	238.8	310.4	275.2	— 11.3	8,691	7,980	17,843	16,530	— 7.4
Kentucky	12.7	11.9	12.0	20.2	20.8	+ 3.0	566	605	1,073	1,299	+ 21.1
Louisiana	347.4	306.8	341.0	326.8	360.1	+ 10.2	9,150	10,445	19,000	21,555	+ 13.4
North Louisiana	139.3	75.3	70.8	81.3	77.1	— 5.2	2,275	2,235	4,693	4,638	— 1.2
South Louisiana	208.1	231.5	270.2	245.5	283.1	+ 15.3	6,875	8,210	14,307	16,917	+ 18.2
Michigan	56.8	62.5	49.4	58.0	52.6	— 9.3	1,625	1,527	3,410	33,128	— 8.3
Mississippi	70.5	96.2	92.9	56.7	43.7	— 22.9	1,589	1,268	3,355	2,685	— 20.0
Montana	22.0	22.0	22.0	20.4	20.8	+ 2.0	572	606	1,147	1,258	+ 9.7
Nebraska	5.1	3.9	4.2	2.2	1.2	— 45.5	61	34	127	76	— 40.2
New Mexico	112.2	67.3	109.9	99.4	112.9	+ 13.6	2,783	3,275	5,782	6,778	+ 17.2
New York	15.1	15.3	14.5	13.9	13.2	— 5.0	389	372	807	783	— 3.0
Ohio	9.9	10.6	9.4	8.7	9.0	+ 0.3	244	258	497	537	+ 8.0
Oklahoma	427.6	389.6	392.2	350.5	326.1	— 7.0	9,813	9,456	20,370	19,607	— 3.7
Pennsylvania	49.3	52.7	47.6	43.9	39.8	— 9.3	1,229	1,176	2,587	2,401	— 7.2
Texas	1,532.3	1,081.0	*1,550.1	*1,357.9	1,911.9	+ 40.8	*38,020	55,446	*78,961	114,357	+ 44.8
E. Texas Field	386.2	225.4	291.0	325.1	390.6	+ 20.1	9,103	11,327	18,977	22,730	+ 19.8
Other E. Tex.	86.1	78.7	80.0	100.5	112.5	+ 12.0	2,815	3,263	5,863	6,869	+ 17.2
North Texas	137.1	130.5	144.3	135.3	139.9	+ 3.4	3,790	4,059	7,888	8,407	+ 6.6
West Texas	302.4	185.8	242.4	210.7	362.0	+ 71.8	5,900	10,498	11,933	21,788	+ 82.6
Panhandle	92.1	83.5	75.5	88.9	102.0	+ 14.7	2,489	2,958	5,144	5,998	+ 16.6
Gulf, Upper	303.2	227.5	250.1	320.4	516.6	+ 61.2	8,973	14,981	18,237	31,118	+ 70.6
Gulf, Lower	126.9	82.6	102.1	100.8	193.2	+ 91.7	2,834	5,601	5,856	11,613	+ 98.3
Southwest Texas	78.2	48.0	63.1	48.2	75.2	+ 56.0	1,350	2,181	2,819	4,639	+ 64.6
South Central	20.1	19.0	21.3	17.3	19.9	+ 15.0	484	578	1,000	1,195	+ 19.5
West Virginia	9.8	10.4	9.5	9.3	8.6	— 7.5	261	241	557	508	— 8.8
Wyoming	82.2	85.4	81.5	84.2	96.1	+ 14.1	2,357	2,787	4,998	5,627	+ 12.6
Others	.2	.2	.2	.1	0.	.....	4	0	9	0	.....
Total U. S.	4,138.5	3,501.8	4,070.0	3,871.4	4,404.1	+ 13.8	108,399	127,719	225,626	263,639	+ 16.8

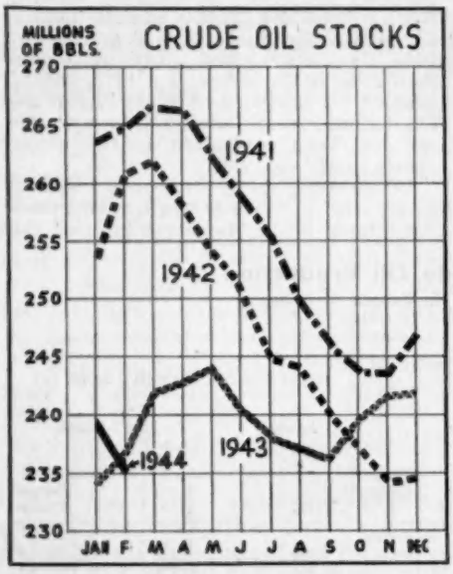
* Data by districts on A.P.I. basis, and therefore do not agree exactly with Texas total.

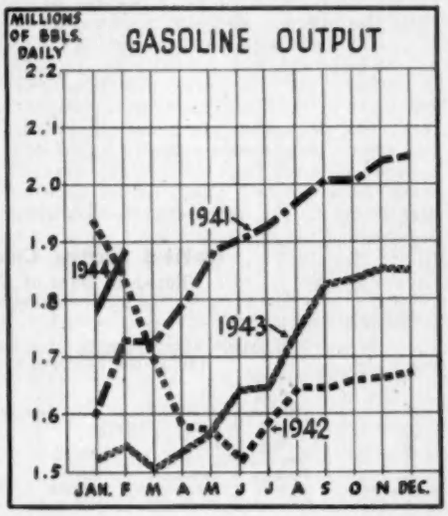
Monthly Activity Trends

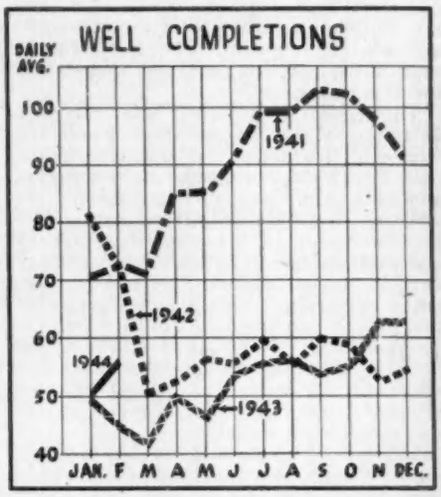


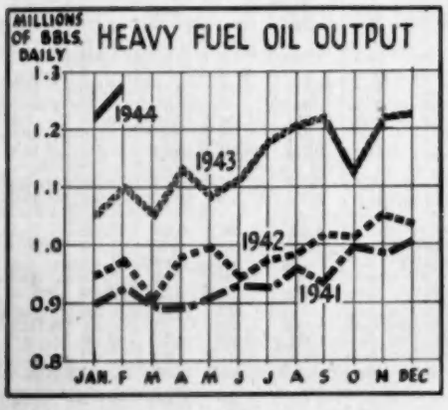


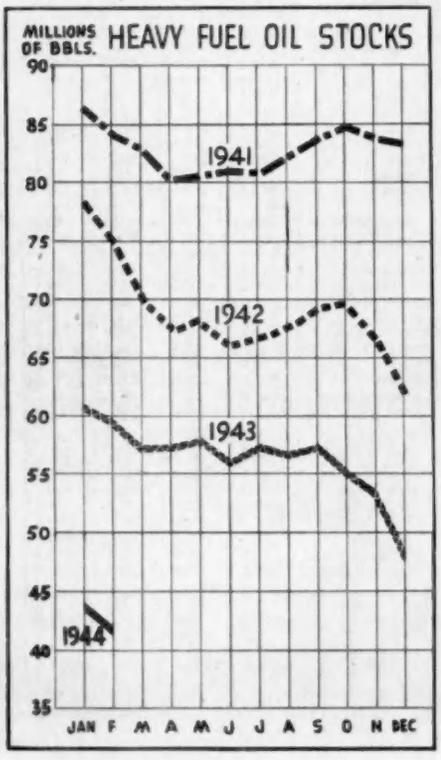


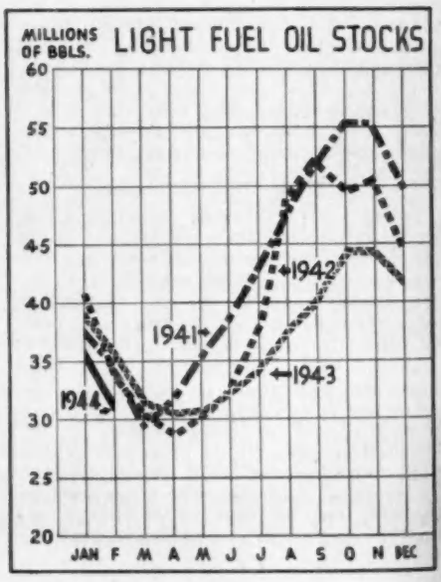


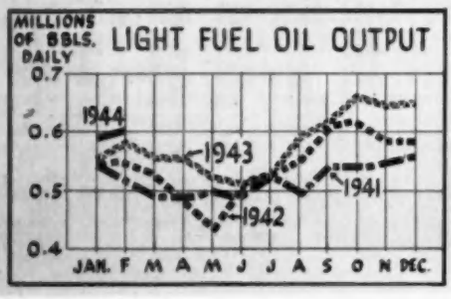












The Oldest Builder of Rotaries

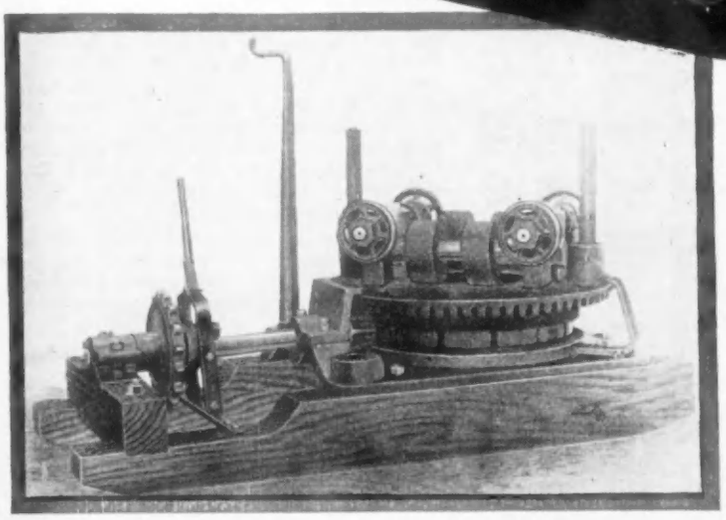
GUMBO BUSTER

Has the Newest Improvements in Rotaries

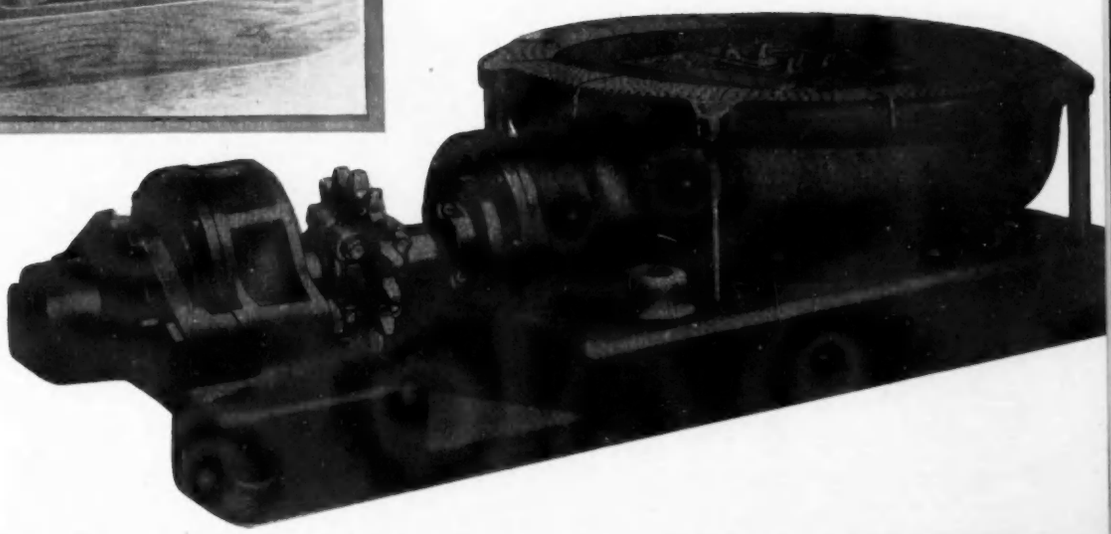
Gumbo Buster is entering its 44th ye of building rotaries. Never, during that tin has research and constant improvement towc better rotaries stopped. T rotary, shown at left, made in 17½" and 2 sizes. The larg model, pictured l low, is made in 2 size. They are bath, fully enclos roller bearing ro ries, and handle the heaviest tating loads at highest drilli speeds.

These modern, streamlined rotaries ar far cry from Gumbo Buster's 1900 model, p tured at left . . . the oil industry's first s cessful rotary.

For specifications see Page 205, your n Composite Catalog.



The original Gumbo Buster rotary was 12" size, weighed 3,000 pounds, and sold for $250.



The Gumbo Buster Army-Navy "E" Flag now flies a white star for continued excellence in production.

46 YEARS OF MANUFACTURING ROTARY DRILLING EQUIPMENT

THE AMERICAN WELL & PROSPECTING CO.

GUMBO BUSTER

DISTRIBUTED BY:

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responsibility, in spite of some imports and much talk developing foreign reserves. Closely in line with the greatly expanded requirements, United States production has been boosted sharply upward, above the trends of any former years. Domestic output of crude averaged 4,394,000 barrels daily in January and February, 1944, clearly a new record for the period, and 15 percent more than the 3,824,000 barrels per day produced in January and February last year, while exceeding the 4,103,000 barrels daily for the like period of 1941 by 7 percent. In February, domestic production of crude averaged 4,406,000 barrels daily, a little more than in January.

Even so, however, the fields of the country were not turning out all the crude that was needed, and between January 1 and February 29 it was necessary to draw on crude storage to the extent of nearly 5,000,000 barrels, or at the rate of 80,000 barrels per day. If production had been sufficiently great to avoid the January-February draft on storage, it would have had to run 18 percent higher than in the first 2 months of last year.

Reflecting the needs of the refineries, which were supplied from crude storage as well as current production, crude runs to stills were 19 percent higher per day in January-February, 1944, than in the like period of 1943. The runs were fairly close to current production, although some crude never reaches the refineries, being used direct as fuel or lost in handling. The runs of January-February averaged 4,313,000 barrels daily, also a clear new record for the period. That was an increase of 19.2 percent over the 3,619,000 barrels per day charged to stills in the first 2 months of last year and 13.2 percent more than the 3,810,000 daily for the like period of 1941. The actual volume of 258,825 barrels of crude run to stills in the 60 days of January-February, 1944, was 21.2 percent greater than the 213,541,000 used in the 59 days of January and February last year. As in the case of production, crude runs to stills were somewhat higher in February than in January, having averaged 4,322,000 barrels daily, or 18.7 percent more than in February last year.

Importantly responsible for current heavy demand for petroleum is the sharply increased and record-breaking need for gasoline, although requirements

Production of and Indicated Demand for Petroleum and Principal Products

Based on Data from U. S. Bureau of Mines for Former Years; on Data from American Petroleum Institute for 1944.

(Thousands of Barrels)

ITEM	FEBRUARY 1941	1942	1943	1944	Percent Change '43-'44	FIRST 2 MONTHS 1941	1942	1943	1944	Percent Change '43-'44
ALL OILS										
Domestic Production, Total	105,631	120,918	115,239	135,219	+14.8	221,480	256,876	239,826	279,139	+16.4
(Daily Average)	3,773	4,319	4,116	4,663	+13.3	3,754	4,354	4,065	4,652	+14.4
Crude Oil	100,791	113,961	108,399	127,719	+17.8	211,438	242,223	225,626	263,639	+16.8
Natural Gasoline	4,565	6,768	6,840	7,500	+ 9.6	9,449	14,256	14,200	15,500	+ 9.2
Benzol	280	189				593	397			
Imports, Total	6,758					12,461				
Crude	3,371					6,164				
Refined	3,387					6,297				
Change in Stocks	+240	+2,691	—275	—6,041		—5,761	+4,269	+180	—4,099	
Stocks Beginning of Period	557,953	553,291	497,860	485,996	— 2.4	563,954	551,713	497,405	484,054	— 2.7
Stocks End of Period	558,193	555,982	497,585	479,955	— 3.5	558,193	555,982	497,585	479,955	— 3.5
Demand, Excl. of Imports	105,391	118,227	115,514	141,260	+22.3	227,241	252,607	239,646	283,238	+18.2
(Daily Average)	3,764	4,222	4,126	4,871	+18.1	3,852	4,281	4,062	4,721	+16.2
Demand, Incl. of Imports	112,149					239,702				
CRUDE OIL										
Demand, by Source—										
Domestic Production	100,791	113,961	108,399	127,719	+17.8	211,438	242,223	225,626	263,639	+16.8
(Daily Average)	3,600	4,070	3,871	4,406	+13.8	3,584	4,103	3,824	4,394	+14.9
Imports	3,371					6,164				
Change in Stocks (Refinable)	+1,180	+7,313	+2,652	—3,000		—278	+13,345	+2,186	—4,762	
Stocks Beginning of Period	263,251	253,531	234,423	240,000	+ 3.7	264,709	247,499	234,889	241,762	+ 2.9
Stocks End of Period	264,431	260,844	237,075	237,000	— 0.03	264,431	260,844	237,075	237,000	—0.03
Demand, Excl. of Imports	99,611	106,648	105,747	130,719	+23.6	211,716	228,878	223,440	268,401	+20.1
(Daily Average)	3,558	3,809	3,777	4,508	+19.4	3,693	3,879	3,787	4,473	+18.1
Demand, Incl. of Imports	102,982					217,880				
Demand, by Use—										
Run to Stills, Total	100,445	105,776	101,935	125,366	+23.0	211,128	224,808	213,541	258,825	+21.2
(Daily Average)	3,587	3,778	3,641	4,322	+18.7	3,578	3,810	3,619	4,313	+19.2
Domestic	97,058	102,155				204,594	217,177			
Foreign	3,387	3,621				6,534	7,631			
Exports	1,342	3,258	4,216	5,900	+39.9	3,029	9,012	10,083	12,400	+23.0
Transfers to Fuel Oil Stocks, Other Fuel, and Losses	1,147					3,112				
Demand, Excl. of Exports	101,592					214,240				
Demand, Incl. of Exports	102,934	109,034	106,151	131,266	+23.7	217,269	233,820	223,624	271,225	+21.3
(Daily Average)	3,676	3,894	3,791	4,526	+19.4	3,683	3,963	3,790	4,520	+19.3
MOTOR FUEL										
Production Total	48,374	51,612	43,280	56,801	+ 31.2	100,916	111,647	90,516	114,555	+26.6
(Daily Average)	1,728	1,843	1,546	1,959	+26.7	1,710	1,892	1,534	1,909	+24.4
Imports	452					452				
Change in Stocks	+5,208	+7,104	+4,484	+4,433		+10,361	+14,708	+12,459	+ 9,645	
Stocks, beginning of period	88,800	98,291	83,379	74,717	—10.4	83,647	90,688	75,404	69,505	— 7.8
Finished Gasoline	83,310	93,489	78,475	70,367	—10.3	77,943	86,413	70,772	64,964	— 8.2
Natural Gasoline	5,490	4,802	4,904	4,350	—11.3	5,704	4,275	4,632	4,541	— 2.0
Stocks, End of Period	94,008	105,395	87,863	79,150	— 9.9	94,008	105,395	87,863	79,150	— 9.9
Finished Gasoline	88,697	100,186	82,867	75,000	— 9.5	88,697	100,186	82,867	75,000	— 9.5
Natural Gasoline	5,311	5,209	4,996	4,150	—16.9	5,311	5,209	4,996	4,150	—16.9
Demand(Excl.Small Imports)	43,166	44,508	38,796	52,368	+35.0	90,555	96,939	78,057	104,910	+34.4
(Daily Average)	1,542	1,590	1,386	1,806	+30.3	1,535	1,643	1,323	1,749	+32.2
GASOLINE (Finished):										
Production (straight run, cracked, natural blended)	46,841	49,688	41,699	54,801	+31.4	98,014	108,088	86,824	110,255	+27.0
(Daily Average)	1,673	1,774	1,488	1,890	+27.0	1,661	1,832	1,472	1,838	+24.9
Imports	452					452				
Change in Stocks	+5,387	+6,697	+4,392	+4,633		+10,754	+13,773	+12,095	+10,036	
Stocks, Beginning of Period	83,310	93,489	78,475	70,367	—10.3	77,943	86,413	70,772	64,964	— 8.2
Stocks, End of Period	88,697	100,186	82,867	75,000	— 9.5	88,697	100,186	82,867	75,000	— 9.5
Demand(Excl.Small Imports)	41,454	42,991	37,307	50,168	+34.5	87,260	94,315	74,729	100,219	+34.1
(Daily Average)	1,481	1,535	1,332	1,730	+29.9	1,479	1,599	1,267	1,670	+31.8
KEROSINE										
Production	5,888	6,133	5,852	6,821	+16.6	12,549	12,767	11,454	13,533	+18.2
(Daily Average)	210	219	209	235	+12.4	213	216	194	226	+16.5
Imports										
Change in Stocks	—678	—1,693	—1,280	—1,125		—1,878	—285	—4,122	—2,234	
Stocks, Beginning of Period	8,312	11,007	7,222	8,250	+14.2	9,512	9,599	10,064	9,359	— 7.0
Stocks, End of Period	7,634	9,314	5,942	7,125	+19.9	7,634	9,314	5,942	7,125	+19.9
Demand	6,566	7,826	7,132	7,946	+11.4	14,427	13,052	15,576	15,767	+ 1.2
(Daily Average)	235	280	255	274	+ 7.5	245	221	264	263	— 0.4
DISTILLATE FUEL OIL										
Production	14,732	15,194	16,240	17,564	+ 8.2	31,750	32,096	33,546	35,925	+ 7.1
(Daily Average)	526	543	580	606	+ 4.5	538	544	569	599	+ 5.3
Transfers from Crude	223	178	213	250	+17.4	404	405	437	550	+25.9
Imports	483					904				
Change in Stocks	—3,136	—7,090	—3,716	—3,344		—8,150	—16,215	—9,642	—8,162	
Stocks, Beginning of Period	37,926	40,801	39,014	36,910	— 5.4	42,940	49,926	44,940	41,728	— 7.1
Stocks, End of Period	34,790	33,711	35,298	33,566	— 4.9	34,790	33,711	35,298	33,566	— 4.9
Demand, Excl. of Imports	18,091	22,462	20,169	21,158	+ 4.9	40,304	48,716	43,625	44,637	+ 2.3
(Daily Average)	646	802	720	730	+ 1.3	683	826	739	744	+ 0.7
Demand, Incl. of Imports	18,574					41,208				
RESIDUAL FUEL OIL										
Production	25,944	27,254	30,799	37,218	+20.8	53,824	56,659	63,343	75,280	+18.8
(Daily Average)	927	973	1,100	1,283	+16.6	912	960	1,074	1,255	+16.9
Transfers from Crude	837	1,510	1,708	2,200	+28.8	1,631	3,140	3,758	4,450	+18.4
Imports	2,616					4,827				
Change in Stocks	—2,190	—3,000	—1,151	—1,475		—6,402	—7,809	—2,126	—6,005	
Stocks, Beginning of Period	85,092	78,386	60,808	43,954	—27.7	89,304	83,195	61,783	48,484	—21.5
Stocks, End of Period	82,902	75,386	59,657	42,479	—28.8	82,902	75,386	59,657	42,479	—28.8
Demand, Excl. of Imports	28,971	31,764	33,658	40,893	+21.5	61,857	67,608	69,227	85,735	+23.8
(Daily Average)	1,035	1,134	1,202	1,410	+17.3	1,048	1,146	1,173	1,429	+21.8
Demand, Incl. of Imports	31,587					66,684				

Stocks of Crude Petroleum in the United States, by Grades, at the End of February, 1941-1944

Data from weekly reports of U. S. Bureau of Mines

(Thousands of Barrels)

Grade or Origin	END OF FEBRUARY 1941 (Mar. 1)	1942 (Feb. 28)	1943 (Feb. 27)	1944 (Feb. 26)
Pennsylvania Grade	4,309	3,484	2,880	2,384
Other Appalachian	1,261	1,482	1,368	1,345
Lima-Michigan	1,162	1,546	1,122	982
Illinois-Indiana	20,719	18,972	10,283	13,053
Arkansas	3,116	3,071	2,247	2,804
Kansas	9,051	7,695	8,071	7,888
Louisiana	12,542	12,740	12,238	14,471
Northern	4,719	3,958	3,818	4,041
Gulf Coast	7,823	8,782	8,420	10,430
Mississippi	1,003	2,919	1,608	845
New Mexico	7,463	7,441	6,813	7,397
Oklahoma	64,064	49,984	37,384	32,133
Texas	83,684	93,256	104,422	115,613
East Texas	19,713	22,784	24,961	23,687
West Texas	15,894	22,122	24,132	30,150
Gulf Texas	22,306	26,279	29,618	34,101
Other Texas	25,771	22,071	25,711	27,675
Panhandle			4,975	6,362
North			7,052	5,681
South			4,666	5,698
Other			9,018	9,934
Rocky Mountain	15,167	16,492	13,775	10,406
California	37,099	38,858	32,901	26,302
Foreign	2,536	1,433	105	1,514
Total Gasoline-Bearing in U.S.	263,176	259,373	235,217	237,137
Heavy in California	12,199	10,959	10,504	6,588
Total All Crude in United States	275,375	270,332	245,721	243,725

BEECHCRAFT BOMBER CREW TRAINERS

Leading formation, Beechcraft AT-10 advanced *pilot* trainer. Second, Beechcraft AT-7 (Navy SNB-2) *navigation* trainer. Third, Beechcraft AT-11 (Navy SNB-1) *bombing* trainer. The thousands of these Beechcrafts in use by the Armed Forces have played a dominant part in the training of bomber pilots, bombardiers, and navigators and have earned their excellent reputation by faithful and efficient performance.

COURSES COMPLETED BY TRAINING COMMAND STUDENTS
(as of 30 Nov. 43)

Air crew	1939	1940	1941	1942	1943	Total
Pilots	696	1,786	7,244	28,782	56,008	94,516
Navigators	...	44	601	4,477	13,783	18,905
Bombardiers	...	18	310	5,760	13,998	20,086
Aerial gunners	...	...	...	25,820	81,398	107,218
Miscellaneous	...	...	198	2,325	18,850	21,373
Technicians	...	...	...	273,068	513,333	786,401
TOTAL	696	1,848	8,353	340,232	697,370	1,048,499

A magnificent accomplishment is summarized in the figures quoted above. In only two years, the Training Command of the U. S. Army Air Forces has schooled virtually the entire personnel of the world's greatest air army. Its graduates are beyond doubt the best-trained airmen in all military history. The results of their training are apparent in every news dispatch that tells of bombing missions successfully completed, and of aerial combat scores predominantly favoring our air arms. Here is the sure forecast of our Victory . . . for Victory today must be won in the skies.

Beechcrafts are doing their part!

Beech Aircraft

CORPORATION

BUY U. S. WAR BONDS AND STAMPS WICHITA, KANSAS, U. S. A.

U. S. Crude Runs to Stills and Percent of Refinery Capacity Used

(Thousands of Barrels)

State or District	Peak Before U. S. Entry in War Oct. 1941		Low After U. S. Entry in War May 1942		Current Crude Runs and Use of Refinery Capacity Compared with Year Ago					Total Crude Runs to Stills in First 2 Months of Year		
					February, 1943		February, 1944		Percent Change in Runs Feb. '43-'44			
	Runs Daily	Percent of Plant Capacity Used	Runs Daily	Percent of Plant Capacity Used	Runs Daily	Percent of Plant Capacity Used	Runs Daily	Percent of Plant Capacity Used		1943	1944	Percent Change
East Coast, Texas Inland, Texas Gulf, La. Gulf, Ark. and La. Inland	2,127	93.1	1,498	63.7	1,630	66.7	2,151	87.9	+32.0	95,781	127,726	+33.4
Appalachian	147	88.6	158	91.4	154	87.0	151	85.3	— 1.9	9,152	9,111	— 0.5
Ind., Ill., Ky., etc.	734	97.6	735	99.2	718	88.5	761	92.4	+ 6.0	42,355	45,791	+ 8.1
Okla., Kansas, Mo.	368	89.1	359	86.1	347	83.4	345	82.9	— 0.6	19,909	21,077	+ 5.9
Rocky Mountain	94	69.1	91	65.2	87	59.2	101	67.8	+16.1	5,464	6,371	+16.6
California	618	78.5	605	78.3	704	86.2	814	99.6	+15.6	40,880	48,750	+19.3
Total United States	4,088	90.1	3,446	75.2	3,640	75.6	4,323	89.5	+18.8	213,541	258,825	+21.2

for both light and heavy fuel oils and kerosine also are running sharply higher than in former years.

Motor Fuel Demand

In the first 2 months of this year daily average demand for motor fuel was approximately 32 percent greater than the average for those months of last year and set a new all-time record for the period, having been 6½ percent above the former peak reached in January-February, 1942, just before war influences were really felt. Motor fuel demand of January-February, 1944, averaged 1,749,000 barrels daily, compared with corresponding averages of 1,323,000 in 1943, 1,643,000 in 1942, and 1,535,000 in 1941. These figures reflect especially great demand, relatively, in January, and only slightly lower year-to-year increase for February. For the month of February, the demand for motor fuel averaged 1,806,000 barrels daily, or 30 percent more than the 1,306,000 daily for that month last year.

During March, the demand for motor fuel will continue to run sharply above last year's trend, probably showing an increase of about 27 percent, as forecast by the Bureau of Mines. In its March forecast, the bureau anticipated that the first quarter of 1944 as a whole would show an increase in motor fuel demand of about 28 percent, and that forecast apparently may be slightly exceeded.

The bureau explained that this large increase was due to the reduction in civilian consumption in the first quarter of 1943 before military requirements had begun to assume such larger proportions. It added, however, that the relative gain in total demand probably would be much less in subsequent quarters of 1944, as the coming quarters would compare with periods in 1943 in which war demands rose very rapidly.

The enormous requirements for motor fuel are being met not only by greatly increased crude runs to stills but also by substantially increased yields of gasoline from the crude processed, which are resulting in record-breaking production of motor fuel. Daily average production in the first two months of 1944 was 24.4 percent greater than that in the like period last year and somewhat higher than in 1942, and daily output in February was 26.7 percent above a year previously, also setting a new record. However, this production was not high enough to be in line with the extraordinary demand, and it was not possible during the first 2 months of this year to make adequate seasonal additions to motor fuel storage, a part of what should have gone to storage actually having been used currently. Thus there was some impairment of the motor fuel storage position. At the end of February, motor fuel stocks were 9.9 percent lower than one year previously, whereas on January 1 they had been only 7.8 percent lower than a year before.

The present relatively low motor fuel stocks presage trouble in meeting demand in the future, and the only answer may be further reductions of rations for the public, in spite of reports that military requirements may begin tapering off, because huge supplies already have been built up in many strategic locations.

That stricter rationing may become necessary is suggested by the fact that present inventories represent much fewer than normal number of days' supply. In 1941, 1942, and 1943 motor fuel stocks at the end of February represented somewhat more barrels than January-February demand of those years, but in 1944 the stocks represented considerably fewer barrels than January-February demand. End-of-February stocks in 1941 totaled 94,008,000 barrels compared with January-February demand of 90,555,000 barrels, and corresponding data for 1942 are 105,395,000 barrels stocks and 96,939,000 barrels demand, for 1943 an inventory of 87,863,000 barrels against 78,057,000 demand, and for 1944 stocks of only 79,150,000 barrels against January-February demand of 104,910,000 barrels.

Another circumstance which emphasizes probable trouble ahead in supplying sufficient motor fuel is that requirements for fuel oils continue very large, placing limitations on the recent trend toward higher yields of gasoline at the refineries. That trend cannot be continued without accentuating scarcity of fuel oils, although present yields of fuels are far above normal.

Residual fuel oil, in particular, continues in exceptionally great demand, which is being supplied only by further drawing on extremely scanty stocks.

Changes in Refinery Yields of Major Products by Districts

Percent Yield from Crude Run to Stills

REFINERY DISTRICT	GASOLINE Yields in December			KEROSINE Yields in December			DISTILLATE Yields in December			RESIDUAL Yields in December			LUBRICANTS Yields in December		
	1941	1942	1943	1941	1942	1943	1941	1942	1943	1941	1942	1943	1941	1942	1943
East Coast, Texas Gulf, Louisiana Gulf, North Louisiana, Arkansas and Inland Texas	44.4	35.9	35.5	6.5	5.4	5.9	16.3	19.2	19.0	23.2	23.8	26.7	3.0	3.3	2.6
Appalachian	48.7	39.2	42.5	5.5	5.4	5.7	9.6	14.1	11.0	13.5	20.3	17.0	11.6	9.1	9.8
Indiana, Illinois, Kentucky	52.6	42.8	46.1	5.4	5.7	5.4	11.1	15.0	12.5	19.2	24.2	21.3	1.8	1.4	1.7
Oklahoma, Kansas, Missouri	54.9	43.3	45.4	6.1	7.0	6.6	11.5	15.8	13.1	17.7	19.7	18.2	3.3	3.1	3.7
Rocky Mountain	48.2	44.2	45.4	3.0	2.1	2.2	8.8	11.4	10.3	27.6	29.2	31.1	0.7	0.5	0.8
California	35.5	29.8	32.5	0.7	1.2	1.2	10.3	10.2	8.7	45.1	48.4	48.7	1.3	1.3	1.1
Total United States	45.7	37.2	38.1	5.3	4.7	5.0	13.7	16.0	15.1	24.9	28.1	28.8	2.8	2.7	2.4

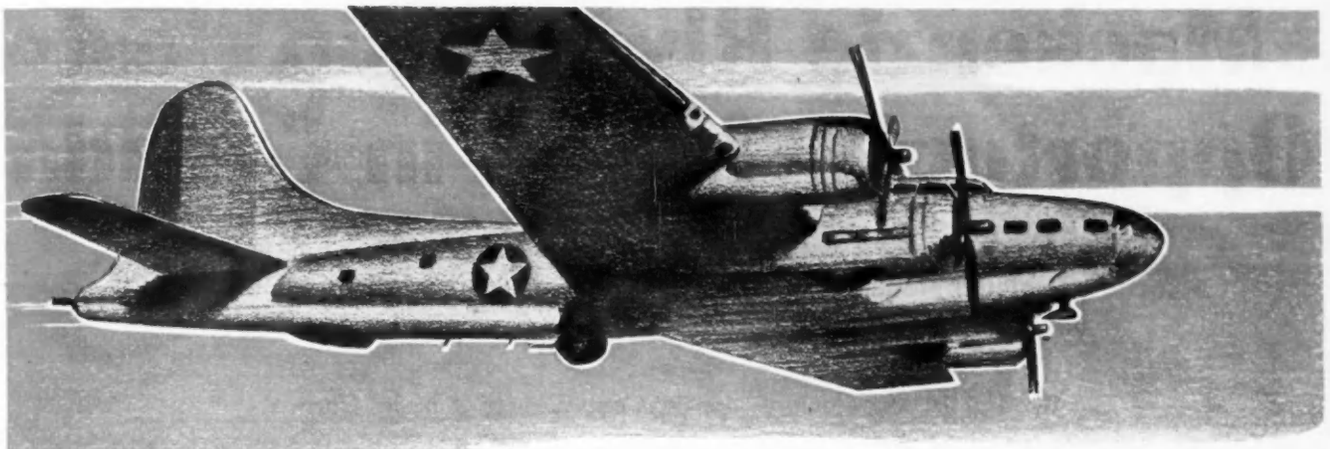
Stocks of Major Petroleum Products Held by Refining Companies in the United States at End of February, Compared with Year Ago and 2 Years Ago

Stocks at refineries, at bulk terminals, in transit and in pipe lines. Data from weekly reports of American Petroleum Institute

(Thousands of Barrels)

DISTRICT	FINISHED AND UNFINISHED GASOLINE Stocks End of February			KEROSINE Stocks End of February			GASOIL AND DISTILLATE FUEL Stocks End of February			RESIDUAL FUEL OIL Stocks End of February		
	1942 (Feb. 28)	1943 (Feb. 27)	1944 (Feb. 26)	*1942 (Feb. 28)	*1943 (Feb. 27)	1944 (Feb. 26)	1942 (Feb. 28)	1943 (Feb. 27)	1944 (Feb. 26)	1942 (Feb. 28)	1943 (Feb. 27)	1944 (Feb. 26)
East Coast, Texas Gulf, La. Gulf, N. La.-Ark., and Inland Texas	49,206	40,096	37,164	6,565	3,617	4,231	17,735	15,399	15,156	20,493	10,061	14,849
Appalachian	3,719	3,029	3,356	261	295	339	376	729	1,209	588	555	403
Illinois, Indiana, Kentucky	22,548	20,048	19,077	1,053	1,022	1,495	3,092	3,676	6,007	3,959	2,756	2,964
Oklahoma, Kansas, Missouri	10,474	7,387	8,152	552	446	450	921	1,543	1,599	1,952	1,412	1,238
Rocky Mountains	2,417	2,052	2,056	100	75	85	303	381	384	617	554	598
California	17,271	20,545	15,443	793	487	529	12,120	11,211	9,411	60,676	54,802	31,335
Total United States	105,635	93,157	85,248	9,324	5,942	7,129	34,547	32,939	33,766	88,285	70,140	51,387

* Bureau of Mines Data for Feb. 28



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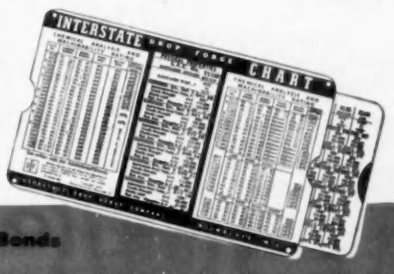

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Mackenzie River Basin Best Opportunity for Oil in Canada

Vast area, particularly in western section, listed possible for petroleum production; nation in urgent need especially for light oils inasmuch as Canada is third largest consumer in the world

By G. S. HUME, Geologist for Oil Controller for Canada, Ottawa

Western Canada offers a tremendous area for prospecting for oil. Although there are reasonably good prospects both on the plains and in the foothills, the Mackenzie river basin offers the best opportunities for the development of large fields.

Present fields in Alberta are supplying an urgent war need in a part of the country where consumption is likely to increase and new fields particularly of light oil are needed at once to supply local requirements.

This article was given in lecture form by the author before 15 local societies of the American Association of Petroleum Geologists during February, 1944.

THE possible oil-bearing area in Western Canada includes 375,000 square miles in the Prairie Provinces of Manitoba, Saskatchewan and Alberta, 40,000 square miles in the northeast corner of British Columbia, 150,000 square miles in the Mackenzie basin of the Northwest Territories and 10,000 square miles at the head of the Peel river in the Wind river basin of the Yukon, a total of about 575,000 square miles. In the Prairie Provinces the possible oil-bearing sedimentary rocks occur from Winnipeg in Manitoba, across Saskatchewan to the mountains west of Calgary in Alberta, a distance of 800 miles. From the international border between the United States and Canada it is 750 miles to the northern boundary of Alberta and still another 750 miles farther north to the Arctic Ocean at the mouth of the Mackenzie river.

To the east of the possible oil-bearing area in Western Canada is the Canadian Shield of Precambrian rocks, devoid of petroleum prospects but rich in mineral resources. It embraces the northeast three quarters of Manitoba, the northeast third of Saskatchewan and a small area in the northeast part of Alberta. The boundary between the Precambrian and younger Paleozoic rocks in northeast Alberta continues north from the west end of Lake Athabaska along the east side of Slave river to Great Slave lake and thence along the west side of the north arm of this lake. From Great Bear lake it continues north to the Arctic Ocean at Darnley Bay, 300 miles east of the Mackenzie river delta. Victoria Island and many of the islands of the west part of the Arctic Archipelago are underlain by sedimentary rocks, mainly Paleozoic.

On the west the oil-bearing territory is bounded by the Cordillera bordering which on the east is a narrow belt of highly disturbed rocks, not more than 20 to 30 miles wide and comprising the foothills. The foothills belt is prominent in southern Alberta, but becomes less so to the north and in the northeast part of British Columbia is not sharply defined from the mountains to the west, nor from the plains to the east. In southern Alberta the eastern mountains are mainly Paleozoic limestones which owing to their hardness stand in high relief in contrast to the softer Cretaceous and Jurassic rocks of the foothills. To the north in the area north of Red Deer river, Triassic rocks appear between the Jurassic and the Paleozoic and these thicken to at least 3000 feet on Peace river, north of which they form a wide belt of outcrops to the Liard river. The Triassic rocks, although not so resistant as the Paleozoic, are sufficiently hard to form high hills particularly in the northeastern part of British Columbia, and hence the distinction between foothills and mountains is less marked here. Also perhaps due to the occurrence of the Triassic rocks in this area the type of structure formed as the result of mountain building forces changes from great overthrust fault blocks as in southern Alberta to more open folds which may be faulted in some areas but eastward from the mountains gradually become less complex and thus merge into the gentle plains structures. There is no doubt these changes are very important geologically in reference to the search for favorable structures for oil and gas accumulations.

North of Liard river in the Northwest Territories the mountains of northeastern British Columbia are offset eastwards and in the Mackenzie river basin east of the Mackenzie Mountains there are not foothills. Mountains also appear north of Fort Simpson east of the Mackenzie river and between these mountains on the east and those on the west there is a syncline or basin in which there are many folds.

Plains Region

The structures of the plains of the Prairie Provinces are all gentle folds with dips that rarely exceed one degree. The possible oil-bearing rocks range in age from Paleozoic to Cretaceous with non-marine Tertiary occupying the Alberta basin from the international boundary for 350 miles northwest. Alberta alone contains more than 255,000 square miles and by far the greater part of this is plains with widely varying geological conditions and oil prospects.

In southern Alberta the Red Coulee, Del Bonita and Taber oil fields and the Bow Island, Foremost and Medicine Hat gas fields are on or at the edges of the Sweetgrass arch which is a broad uplift plunging northward from the Kevin-Sunburst oil field in Montana. In Canada the oil accumulations are related to local structures or are in stratigraphic traps where oil-bearing sands lens out laterally between the overlying and underlying impervious strata. The small production so far obtained at Del Bonita comes from the upper beds of the Paleozoic limestone, the oil from the Red Coulee field in which seven wells have been operated for the last ten years comes from the lower but not the bottom sands of the lower Cretaceous, and the oil in the recently developed Taber field comes from a lenticular sand believed to be the basal sand of the lower Cretaceous which rests directly on Jurassic beds. The gas from the Bow Island and Foremost fields comes from a sand 350 to 400 feet above the base of upper Cretaceous shales and the Medicine Hat gas sand is in the same marine shales but about 300 feet from their top, or 1100 feet above the Bow Island sand. Thus in this small area of southern Alberta there is wide diversity of producing beds and structural conditions.

The Taber oil field, the most important in southern Alberta, now has six producing oil wells, five of which are in a group. The oil is heavy, 18 to 20 degrees API, and has a high sulphur content. It also has a low gasoline yield on straight run distillation. Geological conditions in southern Alberta are such that large oil fields could develop, although drilling to date has shown the Taber field is relatively narrow. Similar conditions in adjoining parts of the same area are suggested by other wells, only one of which, Plains No. 2, has been on production for some time.

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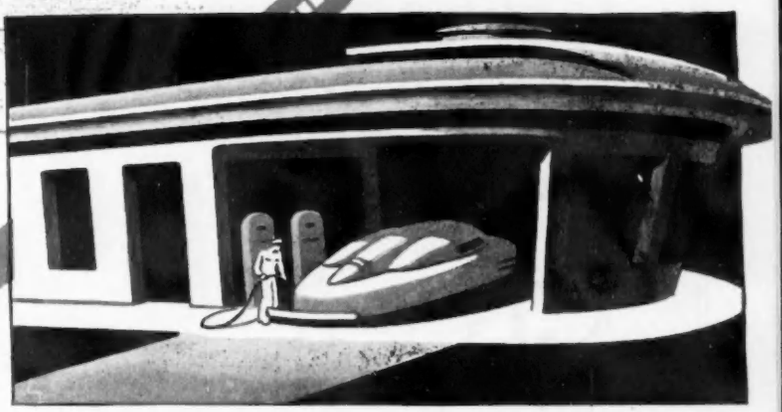

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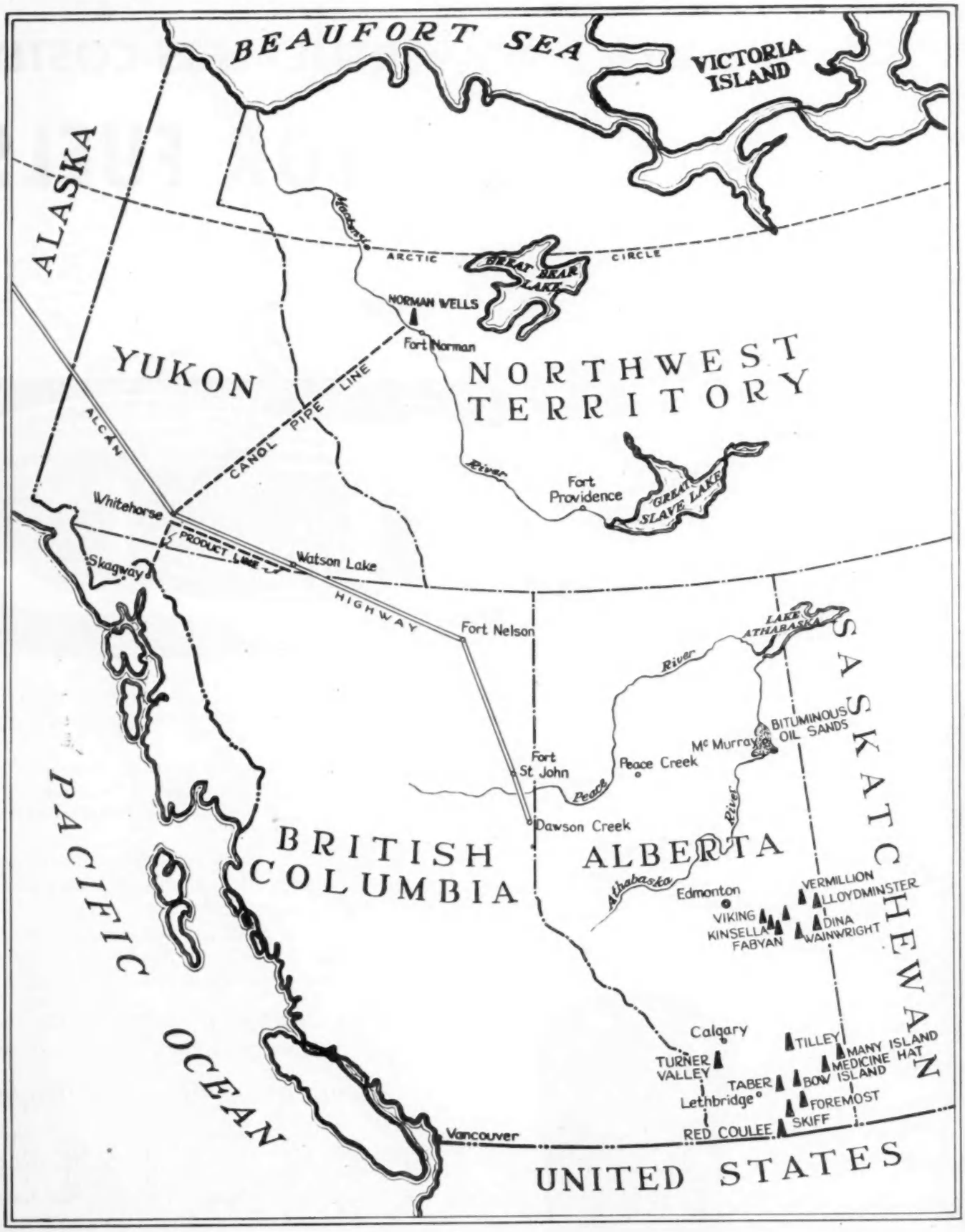

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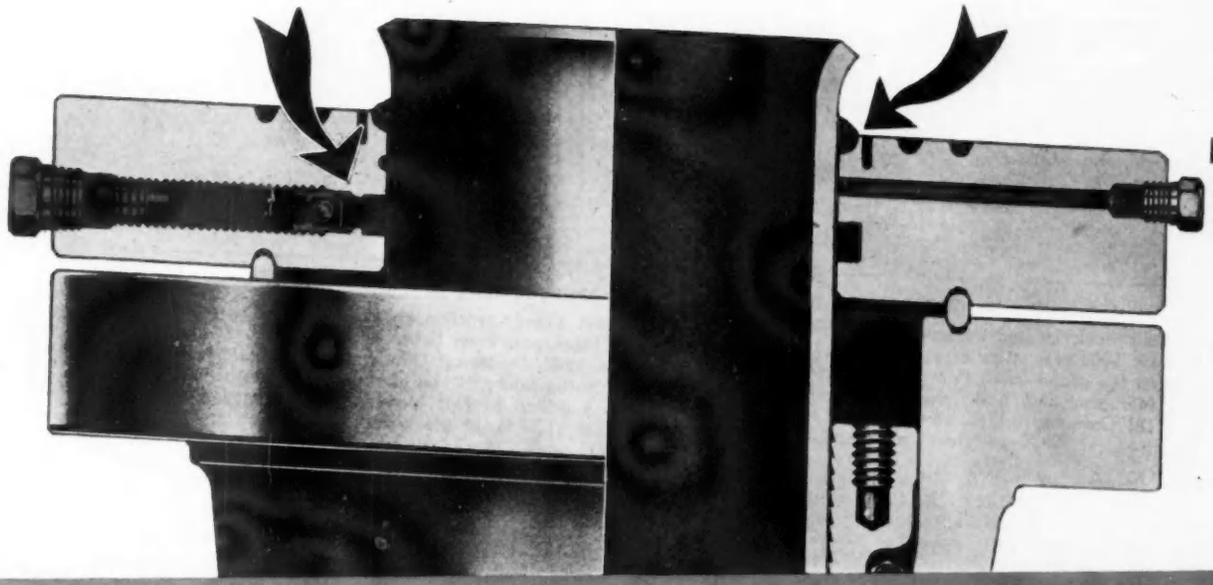

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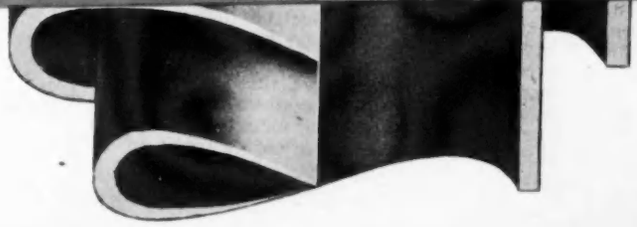
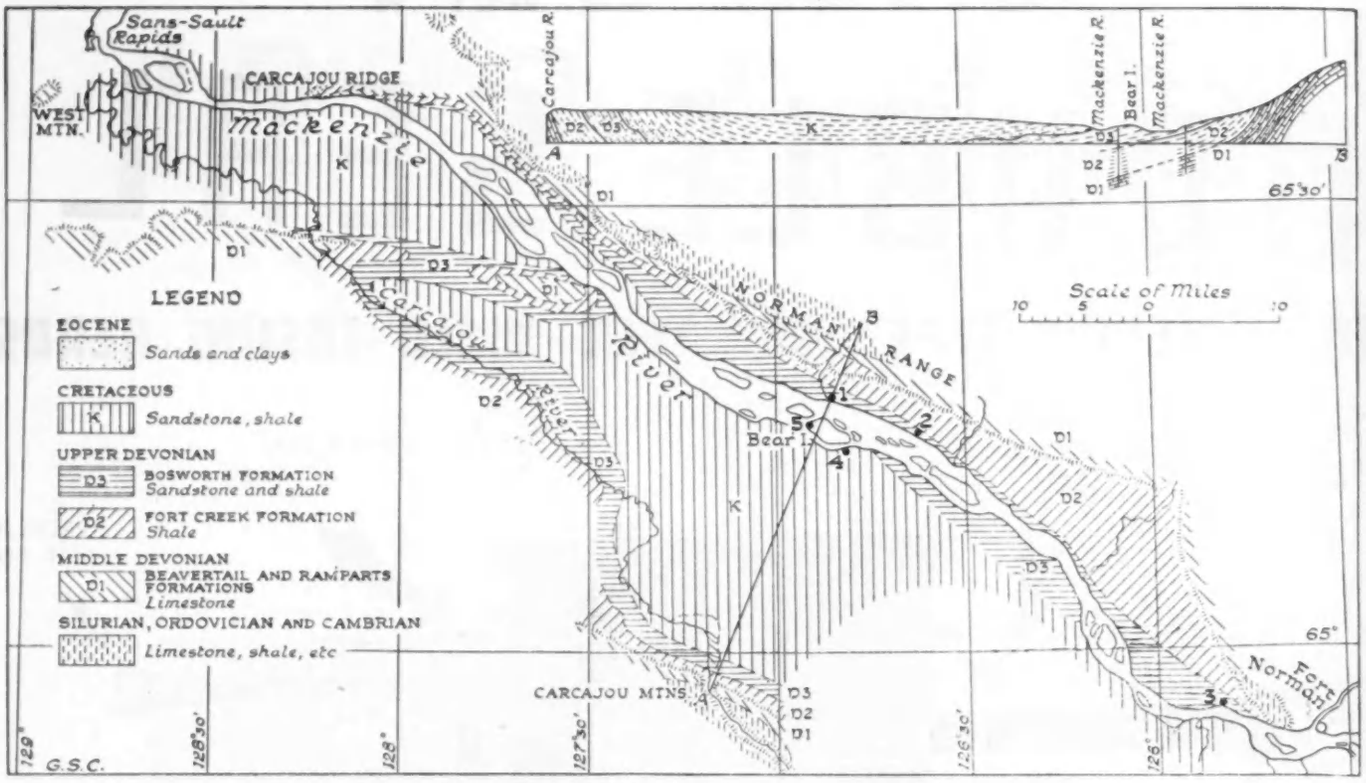




GEOLOGY OF FORT NORMAN AREA AND PRE-WAR DEVELOPMENT

The Norman Wells field, located on east bank of the Mackenzie River within a large syncline about 20 miles wide, has been defined roughly as consisting of about 5000 productive acres, with a large part of it under the Mackenzie River between the north bank and Bear Island, with some producing wells on the island itself. Prior to the start of the Canol project in 1942, Northwest Oil Company (subsidiary of Imperial Oil Company) had completed *four* producing wells, the location of which are indicated by the figure "1" on map; and four dry holes (Figures 2 to 5 on map). The Northwest Oil Company drilled all the wells, except No. 3, which was drilled by Fort Norman Oil Company. Under the Canol program, 30 additional wells had been drilled by November 1, 1943, of which 23 were producers.

In east central Alberta there is the large Viking-Kinsella gas field and smaller gas fields at Fabyan, west of Wainwright, and at Vermilion and Lloydminster. There are also small oil fields at Wainwright, Vermilion, Lloydminster and Dina. All this oil comes from sands in the lower Cretaceous. Stratigraphic conditions are decidedly different from southern Alberta. In the Fort McMurray "tar sand" area on Athabaska river, 250 to 300 miles north of Vermilion and Wainwright, the lower Cretaceous has an alternation of marine and non-marine beds with the "tar sands" in the basal McMurray formation 110 to 180 feet thick. It consists of cross-bedded sandstones that suggest a delat deposit. In southern Alberta the lower Cretaceous sediments are entirely non-marine. Thus between Fort McMurray and southern Alberta there are the former shore lines of the seas in which the marine lower Cretaceous was deposited in the more northerly areas. The Wainwright and Vermilion fields are associated with these favorable shore line conditions and hence the area from the Vermilion north for 250 miles to Fort McMurray is one of favorable oil prospects in lower Cretaceous strata. At present the Vermilion field is receiving considerable development due to war need by railroads for fuel oil on their mountain divisions. A subsidiary company of Canadian National Railways, known as Cannar Oils, undertook the drilling of a number of wells in the Vermilion field in 1943, and in November 12 wells produced 8000 barrels. The oil has to be cleaned of silt and emulsion but otherwise it is suitable for railroad fuel without further treatment.

To the southwest of Fort McMurray drilling near the town of Athabaska has also shown oil in lower Cretaceous strata. It would seem that all the oil in the "tar sands" as well as in the surrounding areas to the southwest and as far south as Wainwright has a common origin and is indigenous to the lower Cretaceous beds.

In east central Alberta Cretaceous rocks rest directly on Devonian limestones and dolomites whereas in southern Alberta there are intervening Jurassic and Mississippian beds. In many wells in east central Alberta the Devonian is highly porous and although shows of oil have been encountered no production has been obtained. Prospects are considered good.

In the Fort McMurray area bituminous sands outcrop along Athabaska river for 118 miles and on tributary streams. The size of the deposit is large but most of it is under heavy overburden. It is only recently that drilling has been done in an attempt to find a commercial deposit suitably located for low-cost operations. Under Dominion government auspices 3000 feet of drilling was done in 1942 at Wheeler Island and at Steepbank river, 55 and 22 miles respectively down the Athabaska river from McMurray. In 1943 a further 3300 feet of drilling has been done in the Steepbank river area. In both of these areas results of drilling are disappointing and in neither have the sands the quality nor bitumen content that occurs in the immediate vicinity of the plant, 2 miles south of McMurray in the narrow Horse river valley where only restricted operations are possible.

Abasand Oils Ltd. has been attempting for many years to extract bitumen and refine it. The bitumen is very high in sulphur content. A limited amount of diesel and fuel oil were sold from the refining of 27,000 barrels of bitumen which was extracted in 1941 and 1942 but a considerable part of which was used as fuel in the intermittent operation of the plant. At no time has the operation approached being commercial.

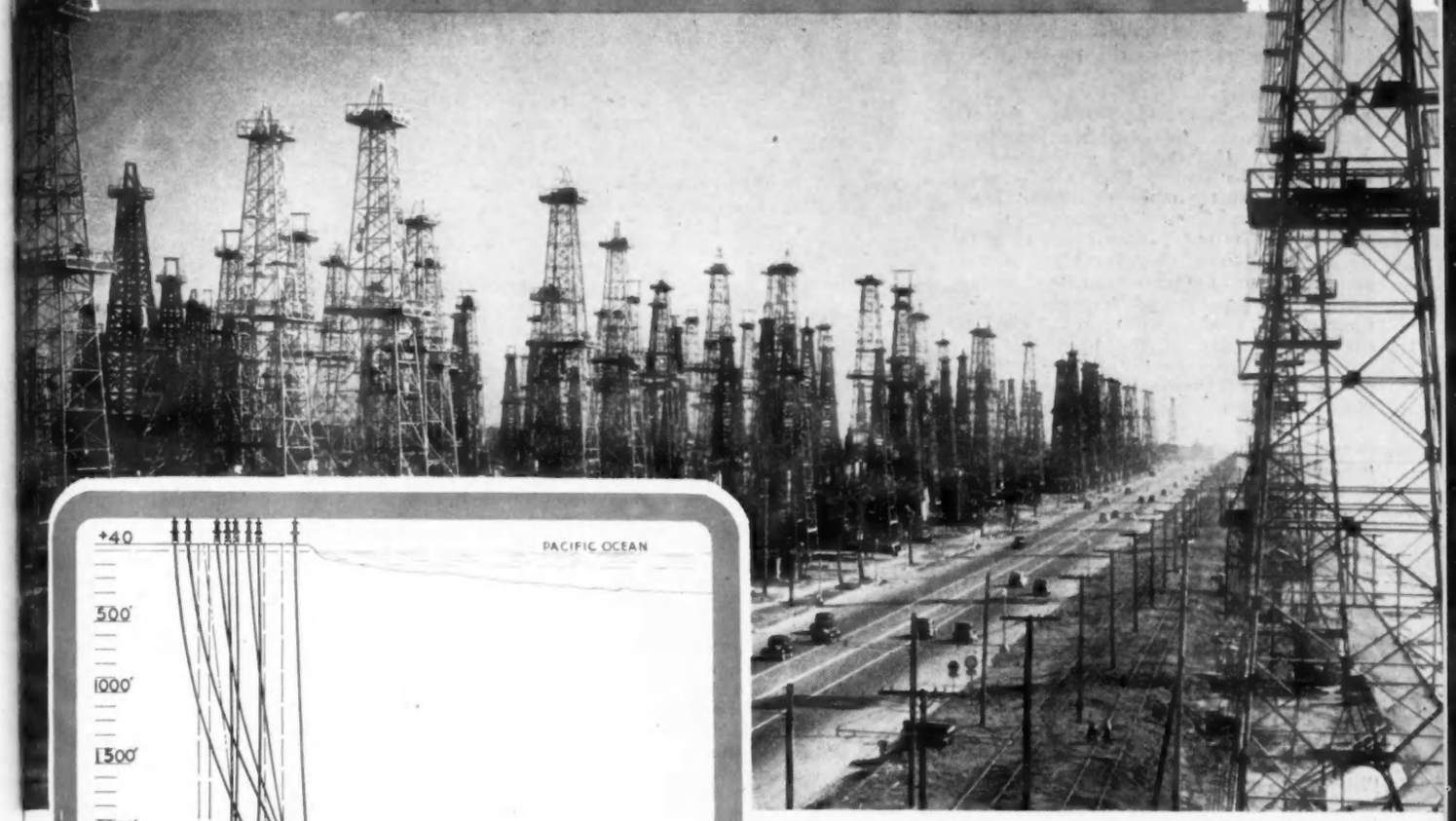
Early in 1943 the Dominion government, in order to get an estimate of the costs of mining and extracting the bitumen as a source of oil, entered into an agreement with Abasand Oils Ltd. under which the Abasand plant is to be remodeled and rebuilt as a pilot plant in order to overcome defects of the older plant. The plant is expected to be in operation in 1944.

Also to get an estimate of refining cost and the quantity and quality of products that can be made from bitumen the Dominion government has engaged Universal Oil Products of Chicago to make laboratory tests. When this information is available and the newly constructed Abasand plant has been in operation for test periods the total costs of producing oil products from bituminous sands will be known. This show whether or not commercial operation to make oil products from the bituminous sands is feasible.

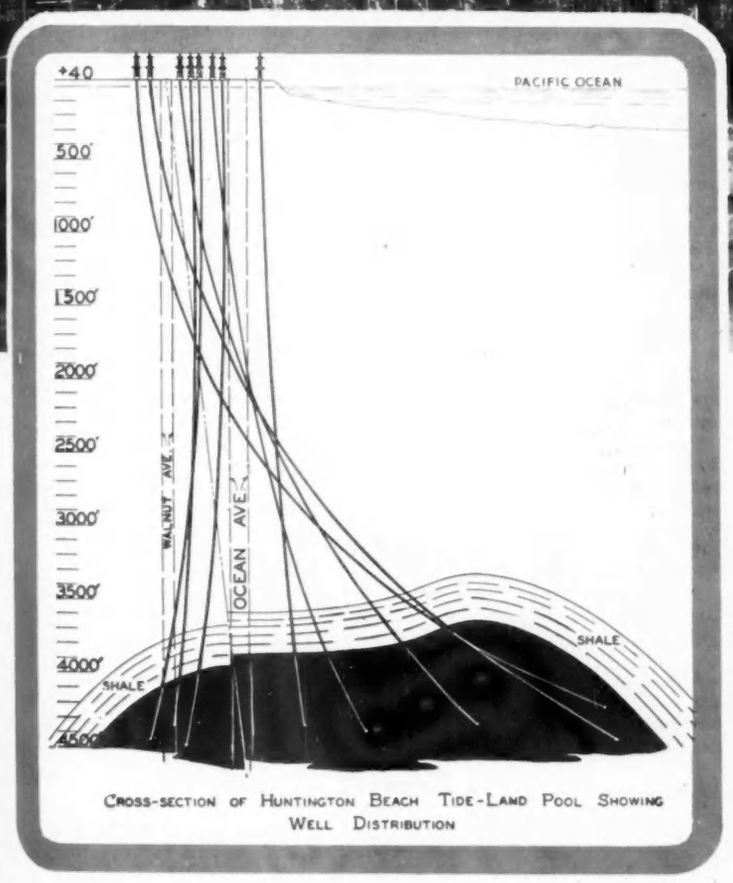
At the present time in addition to Abasand, Oil Sands Ltd. have a small plant 50 miles down Athabaska river at Bitumont for the production of asphalt.

157 MILES OF *Deflected* HOLE TAPS OCEAN OIL RESERVES

ANOTHER MARVEL OF *Eastman* DIRECTIONAL DRILLING



Coastal View of Huntington Beach, Calif., Oil Field
Photo courtesy of The Inman Co.



CROSS-SECTION OF HUNTINGTON BEACH TIDE-LAND POOL SHOWING WELL DISTRIBUTION

Huntington Beach, California, one of the world's richest oil fields, is the scene of approximately **166** deflected wells, drilled to tap a portion of the field which underlies the ocean. A total of **66** miles of horizontal deflection was necessary to accomplish this unusual development, in a total of **157** miles of drilled hole.

In some wells, a deflection of **3770** ft. was required to achieve the objective. The angle of deflection reached as high as 70 degrees in some instances. A total gain of **53,784** ft. of oil sand or an average gain of **324** ft. per well was the result of wells penetrating the oil sand at an angle, thus actually increasing the amount of oil sand exposed to the bore hole.

New horizons which formerly could not be reached profitably, and new sub-surface problems are now being solved through Directional Drilling and Direction Surveying.

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The plant operated only a short time in the autumn of 1943.

Foothills of southern Alberta contain the most important oil field in Canada—Turner Valley, 35 miles southwest of Calgary. The field was first developed as a result of discovery in 1924 of gas with naphtha, but in 1936 crude oil was found on the west flank with subsequent development of an oil field with 214 oil wells producing from Mississippian limestone at the end of 1943. The depth of the oil well is 6000 to 8500 feet, with some wells still deeper. Turner Valley has produced more than 51,500,000 barrels oil, and current production is between 23,000 and 24,000 barrels a day. The peak was reached in February, 1942, with a production of 29,770 barrels a day. The field is now declining and to offset this insofar as is possible a Crown company, Wartime Oils Limited, was formed in 1943 by the Oil Controller for Canada for the purpose of loaning money under supervised contracts to independent operators for the drilling of wells in the central part of the field. In this area the porosity in the reservoir rock is lower than in the north and south ends of the field and in consequence smaller and less profitable wells have occurred. Under these arrangements at the end of 1943 four wells had been completed and seven others are drilling. It is expected 26 wells will be drilled if favorable production continues to be found. In 1943 twenty-six productive wells were drilled in Turner Valley. The oil from Turner Valley has a gravity of about 42 degrees API and on straight run distillation contains 40 to 45 per cent gasoline. It is a very desirable type of crude oil for present war requirements.

The structure of the surface rocks in Turner Valley is complex but that of the producing Paleozoic limestone is much less so although in the north end there are complications by faulting. In the south and central parts of the field producing limestone is a westward tilted block cut off by faults on both east and west sides. In the north end and to a less extent elsewhere the tilted fault block is itself faulted and thus the major fault block is broken into a number of minor fault blocks. On flanks of the field surface dips of strata are commonly steep from 50 degrees to vertical and on the east flank there are a few overturned beds. This condition does not apply to the productive limestone which dips 15 to 20 degrees westward. Surface beds in part have been rotated by faults that pass downward into bedding plane slips and do not cut limestone and in part, on the east flank, are steepened by the drag on the underlying major thrust fault which has been penetrated by wells in a number of places. An interesting and complex feature of Turner Valley occurs in the north end where faulting has evidently depressed a mass of the producing limestone in relation to the main uplift. This apparently has occurred subsequent to accumulation of the oil and in consequence this fault block has carried its oil content down with it. Wells reaching this fault block at 9000 to 10,000 feet deep are finding production. The size of the fault block is unknown. In the winter of 1942-43 a number of wells drilling simultaneously attempted to extend the north end of Turner Valley and many of these ended in failure. Other than this unjustified drilling program there have been remarkably few dry holes in Turner Valley. The productive area is now fairly well defined except in the north end where wells are drilling outward from production in an orderly manner. This will result in

Canada Offers Vast New Oil Prospecting Area Close To U. S.

IN ANY program which may be considered advisable for assuring the United States and the Western Hemisphere new petroleum reserves for emergencies of the future, serious thought should be given the possibilities afforded in adjacent regions, particularly Western Canada and Alaska. For reserves developed in these regions will be accessible through overland routes and pipe lines, and therefore will be far more advantagous than similar or richer reserves situated beyond the oceans. These areas also offer advantages to operators, because of safety of investments, accessibility and other factors.

Norman Wells oil field (Fort Norman) and Canol project likely will live on in petroleum history not because of extraordinary importance or economic value within themselves, but because they represent the first pioneering venture in commercial-scale development of an area which promises to develop into one of the more important oil-producing regions of North America.

The importance of Norman Wells field, itself recognized by geologists as a major field, transcends its own boundaries, because its development may lead ultimately to the discovery and exploitation of additional fields of equal or greater value. A vast area, hardly scratched from a prospecting standpoint, is offered by the interior plains of western Canada, 1500 miles long and 400-800 miles wide. These plains are a northwesterly continuation of the Interior Plains of Coastal Mexico and the United States, within which are the oilfields of Mexico, Texas, the Mid-Continent, and the Rocky Mountain states.

Development Angles

Exploration and development in northwestern Canada and northern Alaska at first will entail the disadvantage of many inaccesible drilling sites but an important start in extending transportation and communication has been made by construction of the Alaska highway and Canol. Extreme cold winters also are a handicap, but this will be mitigated by progress in transportation and communication.

On the other hand, there are definite development advantages, important among them, in so far as United States operators are concerned, being the traditionally favorable attitude which may be expected from the people and government of Canada. For American operators, development in Canada will be almost the same as home field work with no fear justified as to the safety of investments.

As to leasing, operators will be dealing in considerable part with the dominion or provinces as owners of the minerals. In the Northwest Territories including Yukon, mineral rights are owned by the Dominion, and negotiations are with the national government. In the Provinces, such as Alberta, British Columbia, and Saskatchewan, mineral rights are owned largely by the provinces but partly by early homesteaders or their heirs, who acquired mineral as well as surface rights and partly by railroads, which likewise acquired mineral as well as surface rights when the roads were built.

In northwestern Canada, another advantage will be the relative accessibility not only to materials and equipment from United States points and industrial Canada, but also to skilled manpower of the United States oil industry. With transportation improved, supplies would be available in relatively short time. Similarly, geologists, geophysicists, engineers, consultants, service companies, drillers, and other skilled personnel will be less reluctant to go to Canada than to more remote places.

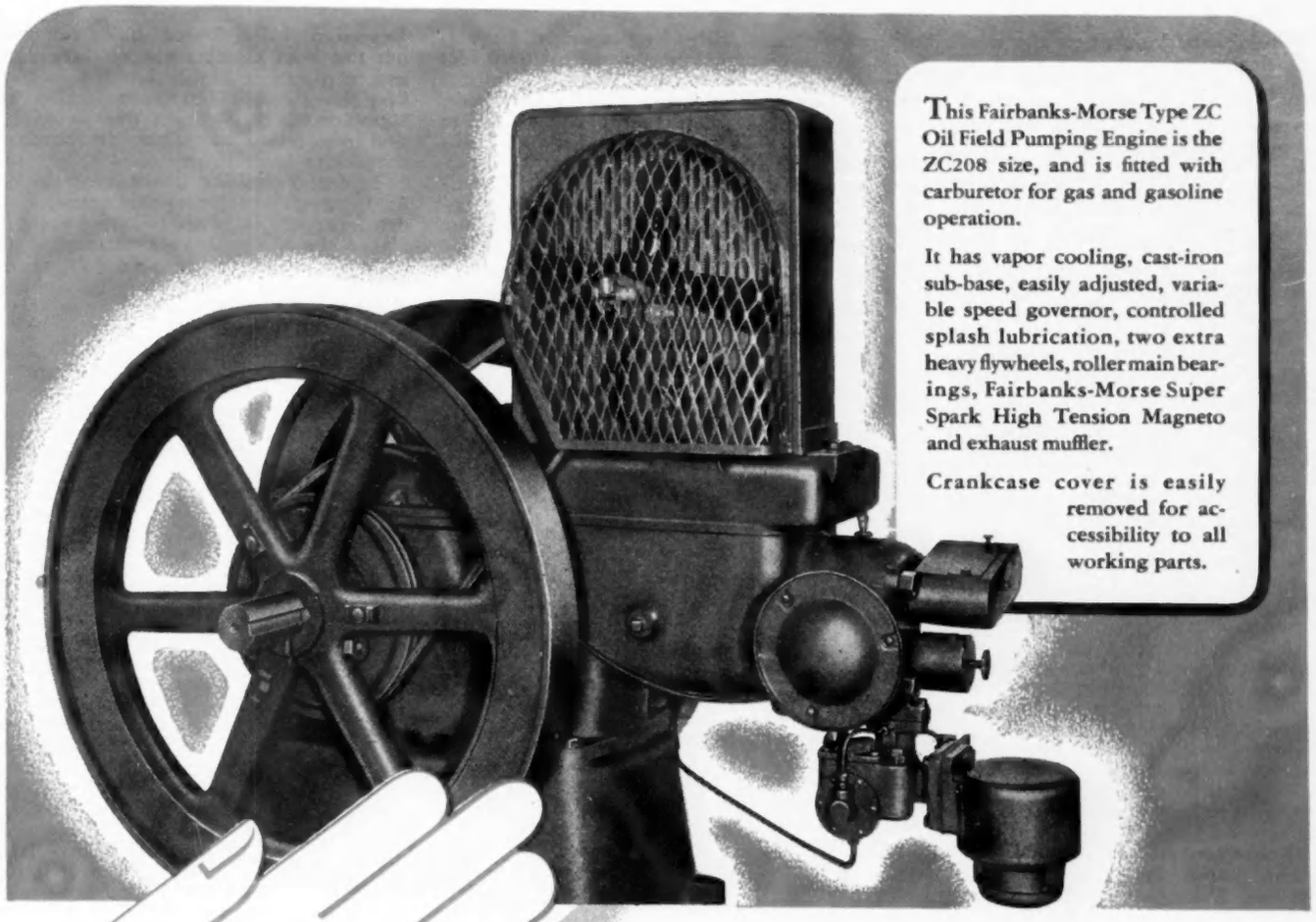
All these factors will result in relatively large representation in this "foreign" development by smaller American oil companies, independent operators, and geophysical, drilling, and other service companies. Already, some of the relatively small United States companies are actively engaged in Canadian development, especially in Alberta, and the service companies, particularly geophysical concerns, are becoming increasingly interested there. With the discovery of some important new fields, this growing interest of Americans in Canadian development would begin to increase geometrically.

Canada Needs Oil

Canada meanwhile would welcome any expansion of her proved reserves and oil production badly needed to meet domestic requirements. Too, after having experienced serious shortage during this war, when supplies from South America were cut off, Canada would like to become independent of imports.

Canada is the third largest oil-consuming country in the world, ranking after the United States and Russia, using more than 50,000,000 barrels a year, or 140,000 barrels per day. Production in 1943 totaled less than 10,000,000 barrels. To supply the deficiency, Canada would need a dozen important fields producing 10,000 barrels a day each or production equivalent to that of today in Colorado, Montana, and Wyoming; or to that of either of the following districts: New Mexico, Eastern Texas outside the East Texas field, the Laredo and San Antonio districts of South Texas combined, or Michigan and the Appalachian states combined.

Furthermore, Canada's consumption of petroleum will be much greater after the war, because of new highways, air lines, growing industry and agricultural expansion. There will be strong demand for Canadian-produced crude oil.



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a minimum loss when the north limit is finally reached.

Turner Valley has many remarkable features, not the least of which is the amount of closure within the producing limestone. The highest gas well reached limestone at a depth of 3220 feet, or 786 feet above sea level. The gas-oil line is, as in all fields with a gas cap, somewhat indefinite, but is usually considered to be 2000 feet below sea level on the reference horizon, namely, top of the limestone. The oil zone occurs below this to a depth of 4100 feet below sea level in the southern part of the west flank and 4250 feet in the northern part. Thus the closure within producing oil zones on the west flank may be considered as 2100 to 2250 feet with an additional 2786 feet of closure in the gas zone, a total of approximately 5000 feet. At both ends of the field the oil-water line is somewhat lower than on the west flank and in the north end wells are producing from the upper porous zone where the top of the limestone occurs at more than 4500 feet below sea level. In a fault block east of the main uplift production occurs where top of limestone is nearly 5000 feet below sea level, and one well recently completed found oil in the upper porous zone and water in the lower porous zone where limestone was 6025 feet below sea level. This is a remarkable condition unequalled anywhere else in oil fields of the world.

Turner Valley may be considered as a type of foothills structures, but so far no further fields of a similar kind have been found in spite of many wells drilled. Perhaps the most concentrated effort to develop a new foothills field has been made in the Jumpingpound area, 20 miles west of Calgary, where Shell Oil Company, after much seismic work, has completed an unsuccessful hole 12,056 feet deep. Other deep wells have been drilled, however, as for example the Home Well on the Brazeau structure northwest of Nordegg and the Imperial Oil Company's wells at Grease Creek about midway between Bow and Red Deer rivers. At present Royalite is drilling at a depth of more than 10,000 feet in a well north of Cochrane in the Wildcat Hills, and a deep cable tool hole, said to be the deepest in the world, is drilling at 9650 feet north of Lundbreck in the Crow's Nest Pass area. These are only a few of the wells drilled. An interesting development has been the occurrence of oil in two wells drilled west of Calgary in the Moose Mountain area where, due to deeper erosion, wells begin drilling below the productive zone of Turner Valley and the oil occurs in the older Devonian rocks. Similar oil shows have been found in wells drilled on limestone outliers on the Clearwater and Ram rivers in that part of the foothills north of Red Deer river. The Ram River test was a small diamond drill hole and a further well is now being started.

In spite of the fact that no new field comparable to Turner Valley has yet been found in the foothills, the prospects must still be considered good. In Alberta the foothills have a length of 450 miles and these continue into northeastern British Columbia for another 450 miles to and beyond the Liard river.

In northeastern British Columbia some geological work has been done along the newly constructed Alaska Highway and many favorable structures are present. South of Peace River a well was drilled by the British Columbia government to a depth of 6940 feet with negative results. The well did not penetrate the lower Cretaceous beds. Farther south on the Monkman Trail in British Columbia about 50 miles southwest of Beaverlodge, Alberta, a structure, known as the Lone Mountain anticline, has been mapped by the Geological Survey. The east limb is short in comparison to the west flank, indicating some overthrust faulting, but on the south end of the axis of the fold there is a large gas seep which contains more than 12 percent ethane and heavier hydrocarbons, suggesting an origin with an oil reservoir. The structure has not been drilled.

The whole of the northeastern part of British Columbia comprising 40,000 square miles of possible oil-bearing territory is a provincial government reservation. In it at the present time no petroleum leases have been granted to any oil companies but some geological work is being done.

Mackenzie River Valley

The Mackenzie river valley, comprising 150,000 square miles and extending westward into the Wind river basin of the Yukon, the most promising oil territory in Canada, recently has been brought to the attention of the public by the Canol project, which includes the development of a field that was discovered more than 20 years ago by Imperial Oil Company. Imperial Oil Company is only concerned, however, with the oil production in this area. Building of the pipeline 600 miles from Norman Wells to Whitehorse, Yukon, and the construction of a refinery at Whitehorse is a United States army project.

The first well at Norman Wells on the Mackenzie river 50 miles north of Fort Norman and 75 miles south of the Arctic Circle was drilled in 1920. The well was finally deepened to 1025 feet and yielded approximately 125 barrels oil a day of 38 degrees API. Subsequently other wells were drilled and a refinery established. During the mining developments on Great Bear and Great Slave lakes beginning in 1932, petroleum products, including aviation gasoline, were made available in quantities sufficient for market requirements. When the Canol project was started in 1942 Imperial Oil Company had 4 wells and a refinery capable of processing 840 barrels of oil a day.

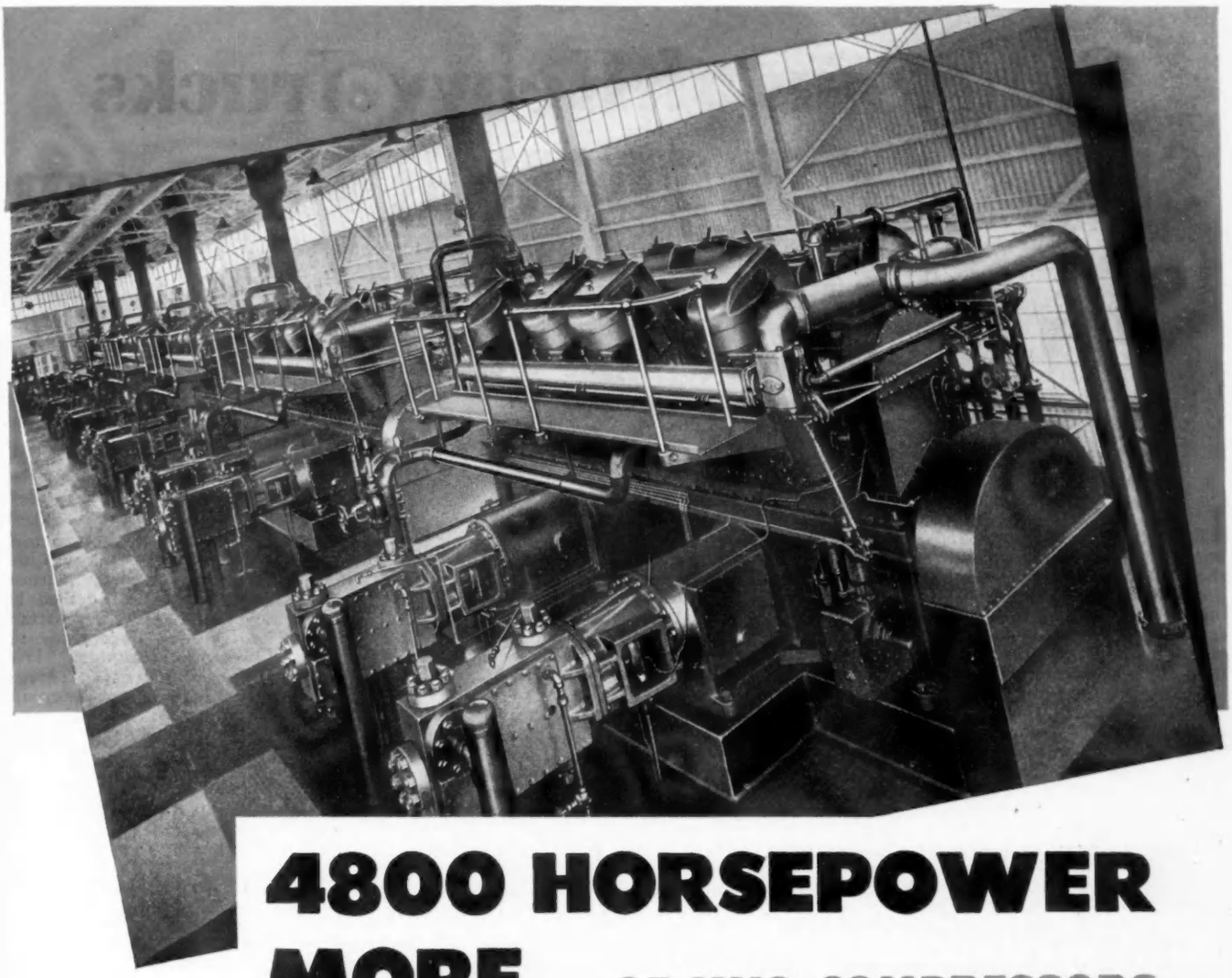
In 1942 under the Canol project developments were speeded up and drilling was continued to the autumn of 1943 when size of the field was established. Dr. O. B. Hopkins of Imperial Oil has stated that a major oil field comparable with a major oil field in the United States has been found and that the area has proven much larger and more productive than originally anticipated. A considerable part of the field is under the Mackenzie river in the mile and a quarter to a mile and a half between the northeast bank and Bear Island. Wells have been drilled on Bear Island and on a downstream sand bar, Goose Island. The Mackenzie river at Norman Wells including the islands is 3 miles wide. Wells drilled on the southwest side between 1921 and 1924 failed to find production.

Oil in the Norman Wells field comes from Middle Devonian limestones although the original discovery well produced only from the overlying upper Devonian shales. These shales comprising the Fort Creek formation are dark and in places so highly bituminous that they have been burnt, presumably by spontaneous combustion due to oxidation of certain materials. In burning, the shales have turned to a bright red color and Vermilion Creek, near the oil field, owes its name to this cause. Evidently great heat was generated since in places the shales have been melted to form slag. Similar burnt deposits occur on Carcajou river as well as in the immediate vicinity of the Norman Wells field.

The first well at Norman Wells was drilled on an oil seepage which issues from the Bosworth formation overlying the Fort Creek shales. The Bosworth formation has an estimated thickness of 1600 feet and like the Fort Creek shales is upper Devonian in age. It contains many sandstone members and is the source of many of the seepages in this area. Under adequate cover and in favorable structures the Bosworth sands could be good reservoir rocks. To the west of Mackenzie river the Bosworth formation is covered by Cretaceous deposits and in various places structures involving all these strata are known to occur. None of these has been drilled but it is obvious that prospects for oil in them are exceptionally good. The Bosworth formation, however, is only one of a number of formations that may have favorable reservoir conditions.

In a large area such as the Mackenzie basin, stretching from Great Slave lake 750 miles to the Arctic Ocean, it is inevitable geological conditions will widely vary, so that the prospects for oil are by no means confined to the discovery of similar situations as are known to exist at Norman Wells. The prolific oil seepages on the north shore of the west arm of Great Slave lake, for example, are directly related to the very porous dolomite in the Middle Devonian Presqu'ile formation. To the southwest this formation dips under younger strata and structures with adequate cover over these dolomites offer excellent oil prospects. This includes a large area south and southwest of Great Slave lake, although in the immediate vicinity of the lake only Devonian rocks occur. This country has been very little explored. It is mostly flat, covered with muskeg and difficult of access except on streams navigable by canoe. The winter road from Peace river to Fort Providence crosses it as does the route from Fort Nelson to Fort Simpson. It should be realized, however, even in these distances the stratigraphic conditions can change considerably.

To the north of Norman Wells there is a large basin of Cretaceous rocks overlying the Devonian in the Peel river area extending westward into the Yukon. Seepages of oil were reported many years ago from this area but only a limited amount of geological work has been done. The Wind river basin is a Cretaceous plateau at an elevation of about 2000 feet and in part has a basin of higher Tertiary strata. Its southern margin is within 100 miles of Beaver river where mining operations are being carried on and from which a tractor road runs to Keno Hill in turn connected by a 40-mile all-weather road to Mayo. In the summer boats run between Whitehorse and Mayo. The area is thus not too far removed from present established transportation.



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Shortage of Heavy Trucks Slows Down Drilling Program

Year's manufacturing program, recently announced, is far short of normal replacement requirements as PAW urges operators to increase activities; delay typical in applications for trucks

By TOM TURNER, Staff Writer

IF THE oil industry expands its drilling operations sufficiently to complete the 24,000 wells expected of it in 1944, a critical shortage of heavy-duty trucking facilities must be whipped. Currently, this shortage has increased rig moving time from 10 to 20 percent more time than is normal. This time is lost. Unless immediate and effective action is taken to alleviate the situation, it will become steadily worse as additional trucks become unusable, and the number of wells that the industry may be able to drill will be decreased seriously.

Office of Defense Transportation Director Joseph Eastman recently stated that 88,000 trucks were expected to be manufactured in 1944. A short time previously War Production Board had announced there would be 80,000 trucks manufactured; however, this 10 percent increase in the original anticipated quota for the whole country is not sufficient to satisfy needs, being far below normal replacement requirements. In 1941 700,000 trucks were sold, and in 1942-43 only 100,000. These figures indicate that the country was short 1,300,000 trucks at the beginning of 1944, and will be nearly 2,000,000 short of normal by the end of this year.

Few drilling contractors own trucks of sufficient capacity for moving heavy equipment. Most contractors have found it good business to contract moving of the heavy parts of a drilling rig. Small miscellaneous and light-weight equipment can be moved by small trucks for which other duties can be found at all times.

Difficulties of trucking contractors, cause of the current critical situation include: (1) Shortage of spare parts require longer downtime for repairs. (2) The manpower situation is very serious. (3) Few trucking contractors have been able to get permits for buying new equipment.

One Contractor's Experience

One drilling contractor had an experience typical of all those applying for new trucking equipment. He needed a pickup truck and the following is his experience:

September, 1943—Located nine new pickup trucks, all under one roof, waiting for a buyer with the necessary certificate of purchase.

October 5, 1943—Contacted ODT and was told that he would not be allowed a truck even if he applied.

October 23, 1943—After several tries, made an application stick with the ODT. Application had been returned twice for insignificant information. Stated in application that truck would be used to service rotary and cable-tool rigs, of which eight rotary and three cleanouts were operating, two rotary on deep wildcats.

October 28, 1943—ODT requested a letter further explaining the need of such a truck. ODT was advised: Equipment to be hauled in truck, viz., fishing tools, cable-tool bits, jars, overshots, subs, etc., too heavy for passenger car. Pickup would release a heavier truck for other duties. Most loads would weigh 1000 to 1500 pounds. In past years 80 percent of contractors hauling was done by common-carrier or contract. Drilling operations had increased 500 percent. Necessary to have equipment on hand to take care of rig breakdowns. Truck to be operated 100 miles per day, 90 percent of the time loaded.

November 9, 1943—Application denied by ODT because "Field report indicates that common carriers in the area (West Texas-New Mexico) have equipment available for hire."

Vital Need Shown

December 1, 1943—Appeal filed with ODT. Two letters were attached from common carriers in the area citing their inability to take care of the contractor's requirements and a verbal statement from a third trucking firm also was quoted. A letter was attached from the division superintendent of a large oil company for whom the contractor was drilling, stating that the contractor's work was slowing down and was not satisfactory due to his need for a truck.

January 5, 1944—Appeal denied by ODT because "Washington is reluctant to release new vehicles except for replacement of worn-out equipment. It is believed that public-carrier service should be secured in that area as equipment has been released for that purpose."

250 Heavy Trucks Needed

This experience shows that the drilling contractor is on his own and must get along the best he can. Common carriers are doing all they possibly can to help. After hearing about this situation and about the new pickups, a trucking contractor attempted to purchase one pickup but his application was also denied.

Several drilling contractors estimate that 250 heavy-duty tandem trucks could bring the rig transportation problem back to normal, this without adding a single new employe, merely by replacing worn-out equipment. Solving this problem would also bring back the 15 percent lost drilling time without adding a new employe or purchasing a single new rig by the drilling contractor.

Approximately 19,000 wells were drilled in 1943. Original demands on the industry were for 24,000 wells to be drilled in 1944 with plans now to increase this by 6000 wells, making a total of 30,000 wells. If the critical transportation situation is not greatly improved not more than 15,000 wells may be drilled this year.

Trend of Rig Moving Time for Five Contractors

Five drilling contractors, picked at random, have approximately the same excess moving time. Regardless of the normal moving time the excess moving time is directly proportional. These contractors are operating over various parts of the oil country and although not a cross section they are representative of conditions everywhere. Contractor Number 2 uses drag bits in shallow area and drills more hole than contractors using rock bits, his drilling time is considerably less than others but his moving time remains approximately the same. The number of wells that could be drilled by each rig, if transportation difficulties are eliminated or improved, are tremendous from an overall picture of 2000 rotary rigs and 1250 cable-tool rigs.

Drilling Contractor	Average Drilling Time in Days	Normal Moving Time in Days	Current Moving Time in Days	Excess Current Moving Time in Days	Total Time Per Well in Days	Percent Excess Moving Time	Number of Wells Not Drilled in Year (Per Rig) Due to Excess Moving Time
1	45	5	15	10	60	200	1.2
2	11	4	14	10	25	250	11.4
3	20	6	15	9	35	150	3.6
4	30	3	9	6	39	200	1.7
5	50	3	12	9	62	200	1.1

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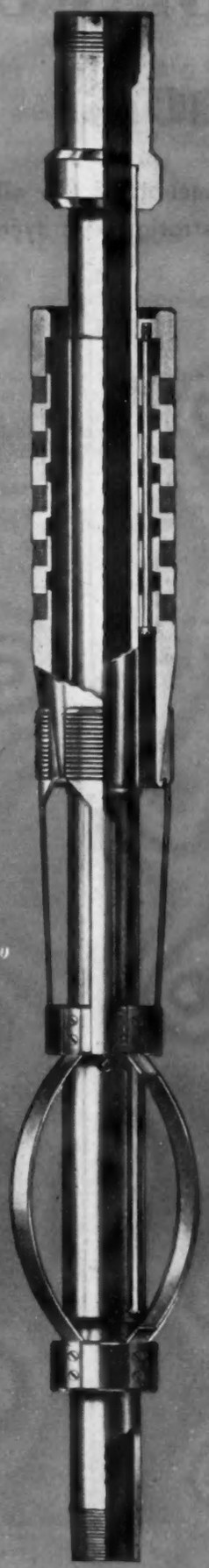

How to Order Parts for Your Lane-Wells Packer

1. Determine the packer name and type. The Lane-Wells catalogs show detail drawings of each packer manufactured.

2. Determine packer size. If the markings on the top collar are obliterated refer to dimensions listed in the catalogs to determine casing size and weight range. Top and bottom connections should be determined to indicate the packer tube size.

3. Determine the "Part Name" and "Part No." by referring to the catalog.

4. Place orders for parts *before they are needed.* They may have to be shipped from the factory. When a packer is removed from a well it should be cleaned, oiled and reconditioned before rust and corrosion cause further damage. A packer on the junk pile or rusting on a tool rack contributes nothing to the war effort.

5. Example of Packer Parts Order:

Name: Lane-Wells Quinta Seal.

Type: Circulation Type B.

Size: 7" 24-30# x 2½" Upset 10 Thread.

Parts needed:

1—Top Collar Seat, Part #103.

5—Packing Rings, Part #104.

4—Friction Springs, Part #110.

16—Friction Spring Screws, Part #111.

Anticipate your needs so parts may be shipped by regular transportation services. Help conserve tires, gasoline and man hours by contacting your nearest Lane-Wells office *before* the parts are needed.

During this period of material and manpower shortage it is necessary not only to select equipment that will perform most effectively but also, as in the case of packers, to run each tool with greatest care to secure proper setting and keep it in condition to extend its period of effective service. Lane-Wells Packers — Quinta Seal and Olympic — are designed and constructed to provide efficient operation. Packer performance can be assured by proper usage and service life extended by diligent maintenance.

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Undiscovered Oil Reserves In Illinois

Chances for finding substantial amounts of new oil by no means exhausted, especially in stratigraphic type traps

By M. M. LEIGHTON, Chief, Illinois State Geological Survey, Urbana, Illinois

ILLINOIS has had two great periods of oil development, one beginning in 1905, the other in 1937. Of the total of 1,022,000,000 barrels produced, 566,000,000 barrels, or half, came from fields discovered since 1936.

All but a fraction of one percent of this latter quantity came from fields located in the area of "best possibilities," as recommended by the Illinois State Geological Survey in a map classifying oil and gas possibilities in Illinois which was prepared and exhibited in 1930. This classification was based on a review by Dr. A. H. Bell of the many well logs and other geologic data which the survey had accumulated over a period of 25 years. The discovery of oil in the central part of the Michigan Basin in 1928 led to recognition of the oil possibilities of the Illinois Basin, and accordingly the deep basin area was included with the area of "best possibilities" in the 1930 classification map.

The same organization that prepared the classification map has been studying and aiding in the oil developments and has recently taken stock of the Illinois situation. It is convinced that the chances for finding substantial amounts of new oil are by no means exhausted.

Although no major pools have been discovered for several years, many small pools have been found and continue to be found every month. In the past, major attention has been given to the finding of structural traps. When the reflection seismograph method began to be used, it was natural that the largest structures should be prospected first. That is why large pools like Clay City, Salem, and Louden were brought in early during the play. It may be that no large pools of the structural-trap type remain to be discovered. However, some of the world's largest oil accumulations, such as East Texas, are of the stratigraphic type, and these are not discoverable by the reflection seismograph method now in use. There is good geological reason to believe that oil accumulations in stratigraphic traps exist in Illinois. The discovery of oil pools of this type will depend upon geologic studies combined with large-scale systematic drilling programs.

Very probably more oil remains to be discovered in additional producing formations, both above and below those now productive. There have been several instances where pay zones have been passed up and later brought in. Also there are many pools producing in the McClosky or shallower formations in which no tests have been drilled below the Mississippian strata.

In January, 1942, under a special appropriation for work connected with the war effort, the Illinois State Geological Survey undertook studies of Pennsylvanian strata encountered in drilling oil wells, for the dual purpose of obtaining information on the oil and coal resources of the Pennsylvanian system. The old fields of Illinois produced some hundreds of millions of barrels of oil from Pennsylvanian sandstones, but the amount so far produced from Pennsylvanian strata in the new fields has been comparatively small, in spite of the fact that nearly all the wells were drilled completely through the Pennsylvanian system. For several years following the new discoveries in 1937 most wells were drilled rapidly through the Pennsylvanian without saving samples or ob-

FIGURE 1
Trailer laboratory used by the Illinois State Geological Survey in oil well studies.

"After our regular price clerk was drafted – my boss was the only one in the office who could check prices on our steel purchases.

"He tried to teach me but I just couldn't master that old method of starting with a base price – then adding extras for quantity, size, finish and what not, because I couldn't get it through my head *which* extras were applicable and *where* to find them in the various extra schedules. And the boss couldn't explain it any too well himself! You see, we've been buying a lot of steel items we never bought before, and I've often heard him say, 'How in the heck did they arrive at that price?'

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taining an adequate log of the formations drilled, and it is probable that pay zones were sometimes passed up. Electric logs have proved to be of considerable help in stratigraphic studies but alone they are inadequate to detect oil zones or to determine thicknesses of coal beds not previously known. To remedy this situation the survey has obtained a portable laboratory which makes it possible for staff geologists to sit on key wells during the drilling of the Pennsylvanian strata in order to make detailed drilling-time logs, to collect and examine samples taken at frequent intervals and then to correlate in the laboratory all the information from a well, including the electric log. Up to date some 180 wells have been logged in this manner, and the results are being studied for the benefit of both the oil and coal industries.

The new data from the key wells are being assembled in structure maps and cross-sections. It is planned that subsurface studies of pre-Pennsylvanian strata will be made in the areas of the new Pennsylvanian structure maps. These will be based on sample studies, electric logs, and drilling-time logs where available. The relation of pre-Pennsylvanian to Pennsylvanian structure will be given special atention.

Deeper Possibilities

Because the oldest formation that has yielded commercial production of oil in Illinois is the Kimmswick ("Trenton") limestone of Ordovician age it has been customary in much of the past test-drilling in Illinois to stop with the first porous zone in the "Trenton." A few test wells have reached the St. Peter sandstone. There remains, however, a sedimentary section estimated to be about 4000 feet thick below the St. Peter which has not been tested in the Illinois Basin. The lithologic character and the structure of the pre-St. Peter strata in the basin is therefore unknown. The fact that large oil production is obtained from older Ordovician and Cambrian strata in the Mid-Continent area raises the question as to the oil possibilities of rocks of the same age in Illinois.

In view of the present need for oil and especially for supplies geographically near areas of large consumption, there is now a strong incentive to explore these deeper strata in Illinois.

Detailed studies of reservoir conditions and production conditions in individual pools are in progress. These have a two-fold use, first to help solve production problems, especially in connection with secondary recovery by repressuring or water-flooding, and second to aid in the interpretation of regional geology. This work involves the collection and testing of cores, the collection and analysis of oil, gas, and brine samples, the measurement of reservoir pressures, and the measurement of the rates of withdrawal of the reservoir fluids.

The planning and execution of a program to explore for oil in stratigraphic traps, in the deeper formations, and in undeveloped shallow pay zones should make use of all available scientific data, both geological and geophysical. The Illinois State Geological Survey with its staff of technical experts, its laboratories, and its extensive files of data, is contributing its resources in research to such a program.

Flowing Versus Pumping With Water Flood

Experience of Eastern Kansas operators show that flowing does not slow down the overall flood-out time for field and also discover it helps to keep constant reservoir pressure which will result in flooding out a larger area of the sand

IT HAS long been the custom in Eastern Kansas to start a water drive by drilling new water-input wells and continuing to pump old producers already equipped with pumping equipment. This method affords one of the shortest "wait" periods for returns that can be had from water flooding, but in the long run, possibly not the most profitable type of procedure.

This method, however, is gradually changing to favor flowing the producers from the start, and some operators are plugging the old wells and drilling all new wells to pattern. Other operators refrain from pumping at the start, but later convert old pumping wells to flowing wells with satisfactory results and at a considerable reduction in overhead operations and maintenance of equipment. Some operators who have made such change report as much as 50 percent temporary loss in daily production, while others have had no loss. When a loss such as 40 percent or 50 percent results, it is possible that the water injection has been slowed down either by lack of injection pressure or the input wells were temporarily shut off during the current change from pumping to flowing.

Not a Rejuvenator

In one instance of a 50 percent loss, it was found that the water input had also been reduced because of increased water production. Naturally this would also bring about a temporary reduction in oil recovery. On another lease changeover, the water inputs were closed surrounding each well as it was cemented with tubing for a week or more and then resumed at their usual rate of input. Over-all the production loss here was negligible. The change to flowing did not act as a rejuvenator, but rather as a reduction in maintenance costs and operating expense. This latter change-over, effected some six months ago, has been very satisfactory. Other instances are known where flowing the wells, besides decreasing operating expense, lessened the corrosion of underground equipment where hydrogen sulfide was present. The subsurface corrosion was neutralized by excluding oxygen from the oil wells.

It has been proven that up-structure flow of oil and water as a result of applied pressure will result in a greater percent of water and a lesser percent of oil than is encountered by a down-structure flow of fluids. This might be due primarily to the fact that the down-stream oil-to-water ratio was greater in oil from natural deposits. However, total recovery has been known to occur in accordance with estimated possibilities regardless of this factor.

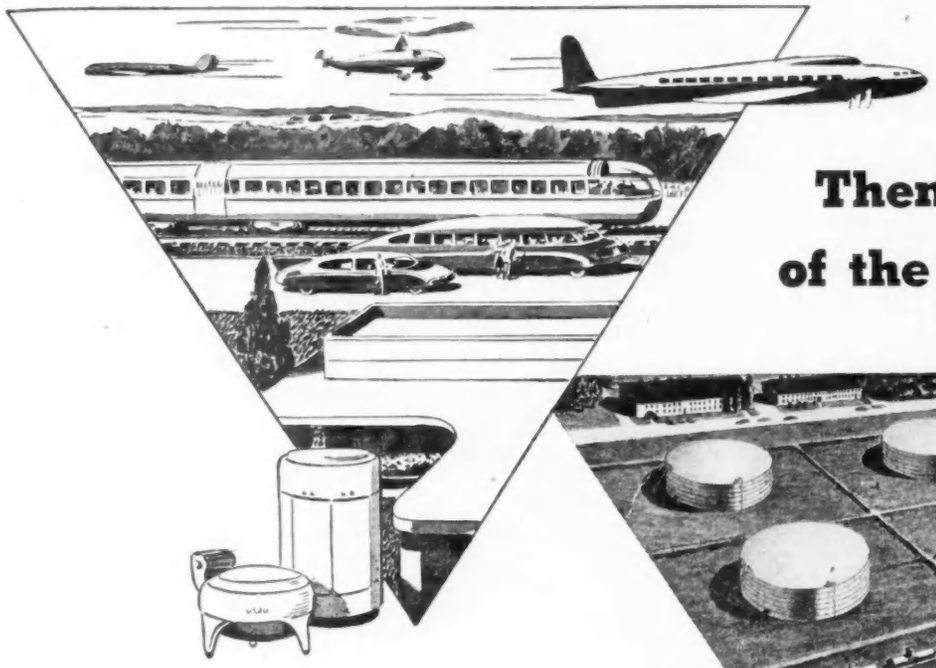
Case of Two Offsets

A condition worth noting has occurred between two offset producers to the same water-input wells. One such producer was pumping, the other flowing. The pumping well pumped water and a little oil shortly after input water began to affect the well. The water increased rapidly until after a few months the well made all water. The flowing well, an offset to the pumping well (both diagonal offsets to the same input well) started flowing 70 percent oil and 30 percent water. It was therefore considered advisable by the operator to change the pumping well to flowing, so as to start producing a certain percent of oil, provided channeling was not too severe before such change was made.

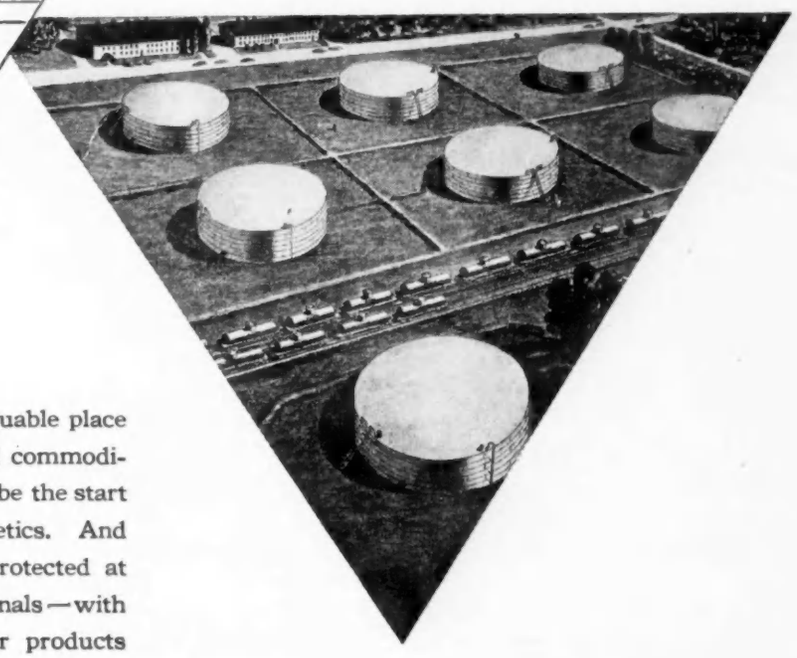
Several operators have encountered similar conditions. However, it remains to be found from further experience whether the cause is pumping versus flowing or what effect, if any, the up-structure and down-structure travel of fluids causes. From experience with such conditions, it appears that when the wells are pumped, the continued draw-down of the fluid column causes too rapid movement of the water and does not effectively wash out the sand, while the fluid column and head pressure against the sand body at the well is sufficient to slow down water travel to an effective velocity when oil is produced by flowing.

Oil wells equipped to flow require only a string of tubing cemented in the top of the producing horizon. Considering the equipment necessary to pump or the equipment necessary to pump or even to maintain pumping wells after they are equipped, there is a large saving in operations. From experience it is apparent that flowing does not slow down the overall flood-out time of a flooded area. Flowing wells also aid in holding a higher and more constant and evenly applied reservoir pressure which will result in flooding out a larger area of the sand. Pumping wells are very likely to narrow the flood ellipses and thereby reduced the flood area.

If this is your picture of the future...



Then this is part of the picture too!



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PRACTICAL OPERATING *Hints* FOR THE DRILLING RIG

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston*

In this and the preceding three numbers, *The Oil Weekly* has reviewed operating hints which have been carried in this section during the past four years. Selection of the hints to be republished has been made on a basis of their especial application to wartime conditions, their coverage of operating problems which are most apt to confront the man new at his job, and their value to widely separated areas. The 50 hints cannot hope to solve all problems, but are offered that they may serve to speed operations and thus to contribute to increased oil discovery and production.

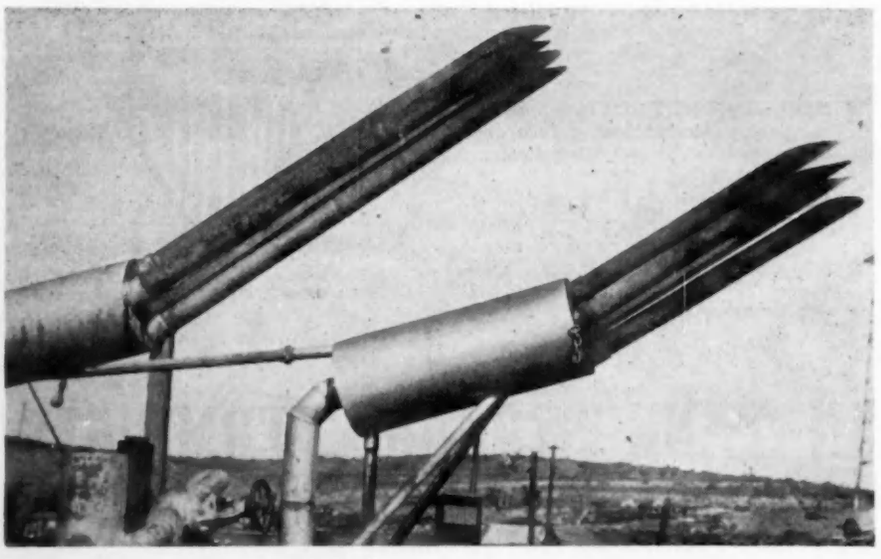
1. EXHAUST CONTROL

Multiple Vent Head Checks Steam Noise

DRILLING in the more congested town-lot or business district areas made it necessary for one contractor to provide a simple, yet efficient steam exhaust muffler for his mud pumps to minimize possible complaints that might be raised due to exhaust noises.

A close-connected, compact muffler does away with the necessity of laying a long exhaust line terminating at an expansion chamber near the outer edge of each location. A 4-foot closed section of 20-inch casing was welded to an especially constructed 6⅝-inch upward tilted exhaust line leading from each pump exhaust manifold. Four 5-foot sections of 4¾-inch light casing, threaded and screwed into as many collars welded to openings in the end of the chamber, conduct the steam upward.

Sharp exhaust noises are cut to a minimum with this assembly, which also makes it possible to remove and tear out each individual pump in a shorter time, independently of the exhaust lines of other pumps and the drawworks.



Multiple tips on exhaust drum break up exhaust head and tend to aid condensation, at the same time greatly reducing the objectionable bark of pumps and drawworks power units

2. MUD HANDLING

Floating Screen Clears Fluid Inlet

SLIM hole drilling in the Mid-Continent areas has made it necessary to streamline operations around the drilling rig without sacrificing details that might eventually be harmful to the equipment.

One operator drilling in Western Kansas saves considerable time by using a small floating screen in the mud pit, through which the suction intake draws the rotary mud. Four 18-inch pieces of 2x6 nailed together provide the float for a box-shaped screen of ¼ to ⅜-inch wire cloth that extends approximately 14 inches below the surface of the mud. This screen box prevents foreign material, such as sticks or hard clods of earth, from entering the pumps, and is always slightly above the surface of the mud where it can be quickly retrieved and easily cleaned when necessary. This can be done without raising the intake pipe very far out of the mud. The floating screen likewise follows the various positions of the mud intake line as it is raised or lowered and moved across the pond.

The timber frame of this screen provides buoyancy and insures positioning of wire mesh.

3. BOILER UPKEEP

Counterweighted Door Speeds Flue Work

PULLEYS and weights were used to raise the door over the boiler smoke box on Quintana Petroleum Corporation's rig being operated in the Washburn field, La Salle County, Texas. The set-up consists of two pulleys on a bracket fastened on the stack. A cable

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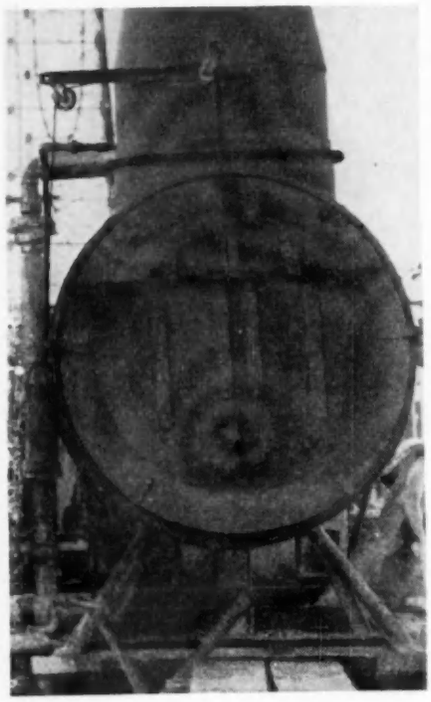
connected to the boiler door is run through the two pulleys and connected to a weight which will balance the door.

When the latches on the door are loosened the door can be easily raised and will stay in place when fully opened. This enables one man to clean the flues in perfect safety, even when the boiler is hot.



Hinged smoke-box cover with weight and pulley system eliminates hazardous blocking of door.

4. RIGGING UP

Unitized Feed Lines Conserve Rig Time

WATER and steam lines from boiler to rig may be welded together in such way as to allow transporting them as individual sections connected by means of unions to save rigging-up time. The 2-inch water lines and larger steam lines form sections approximately 20 feet long, and are welded parallel, spaced about 3 inches apart, joined by short pieces of 2-inch pipe welded perpendicularly to them.

When these lines are being built, especially constructed steel horses are placed near their ends, and the next section drawn near and in position to be joined. Each pipe is equipped with an individual union, these eliminating the necessity of rotating the pipe.

The three unions at ends of each section are easily fastened to make a tight connection, whereas otherwise, the individual pipes would have to be laid separately and screwed together. Rigidity of the hook-up facilitates moving

Welded to form standard units, steam, water and exhaust lines are quickly assembled on job.

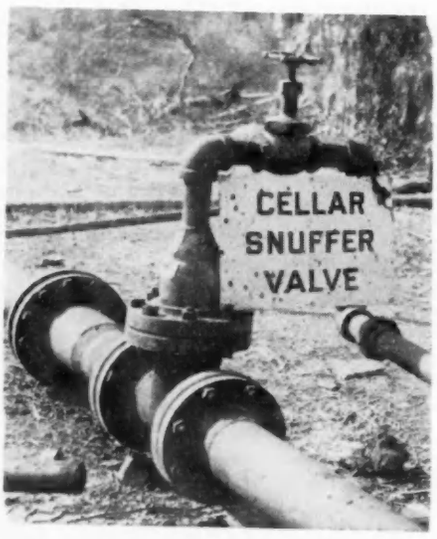
to another location, and necessitates transportation of fewer pieces of equipment. In addition, the pipes are held at the proper distance apart, and the regularity of their spacing adds a neat appearance to the rig installation.

5. FIRE PROTECTION

Steam Snuffer Valve Controls Cellar

THE ever present danger of fire starting in an oil-filled cellar, or beneath the wooden floor of a well while it is being drilled in or swabbed in for production, may be minimized by placing a tee in the main steam line leading from the boilers.

From a take-off swaged down to a 2-inch gate a short distance from the derrick, the 2-inch line is run to the cellar of the well. A conspicuous sign is hung near the gate so that in the event of a fire, and possible confusion, no difficulty need be experienced in



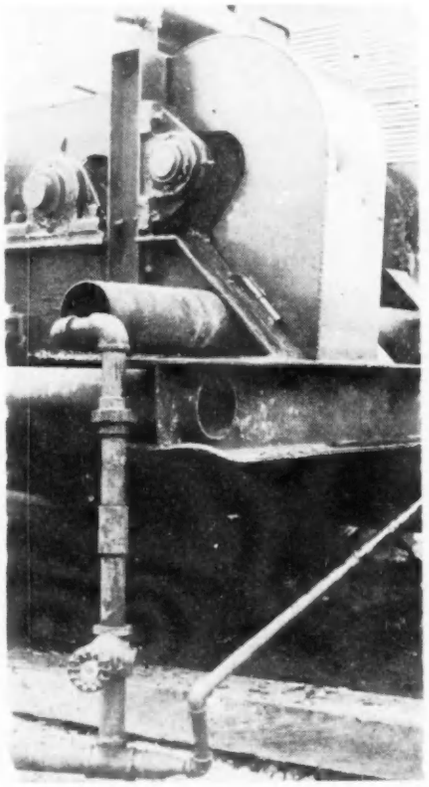
Live steam from main header is carried to flood cellar space through plainly marked valve.

locating the proper valve and snuffing out the fire if it has not progressed very far.

Should the well blow out of control, filling the surrounding area with an explosive or inflammable mixture of gas or oil and air, a similar valve near the boiler setting, taken off from the downstream side of the boilers, can be opened to flood the boiler fires with steam through a nozzle projecting into the fire box.

6. FUEL HANDLING

Exhaust Exchanger Volatilizes Fluids



Carrying fuel line through exhaust pipe provided preheating and cuts loss during cold weather runs.

DURING cold winter months in the Mid-Continent fields, operators who use butane fuel for their drilling engines usually find their fuel consumption increases considerably due to the richer, less volatile mixture which the carburetors are forced to take.

One contractor operating in the Ellinwood area of Western Kansas obtained a saving in fuel costs by running a 2-inch fuel line through a 12-foot section of 8-inch exhaust pipe coming from the drilling and mud-pump engines. The arrangement also provided a shorter warming-up period, greater flexibility of power and less trouble in carburetion adjustments.

A nipple with an elbow was welded into the exhaust line at a point near the

carburetor to connect the outside to the gas line within. A union connection was provided in the gas line just outside the end of the exhaust so that the line can be easily broken down while moving from one location to another, leaving the section of 2-inch pipe permanently within the exhaust line.

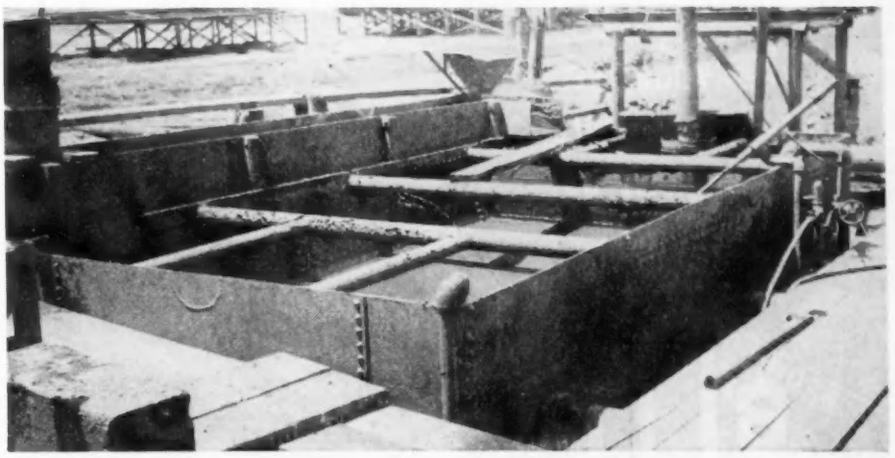
7. MUD MIXING

Steel Shell Serves As Conditioning Vat

USE of a discarded separator shell, boiler drum or feed-water heater body, split longitudinally to form a tank, offers a substitute for the customary steel tank for mixing mud in localities where ground conditions preclude dug pits.

By welding transverse pipe stiffeners across the shell, above the liquid level, the relatively thin walls are supported and the shape of the unit maintained. Intermediate braces, tying the transverse members to the end sheets, strengthen them, and provide foundation on which to lay scaffolding boards, or to place a temporary roof when it is desirable to exclude rainwater from the mud.

The unit does not have the cubic contents of a cylindrical vessel of equal weight, but as an emergency measure the improvised container meets rig needs and permits extension of the drilling campaign.



Braced with welded-in pipe sections, serving also as scaffold or roof supports, this halved pressure unit pinch hits as mud-mixing unit without requiring new construction or added steel.

8. LINE PROTECTION

Chafing Prevented By Salvaged Rubber

AN APPRECIABLE saving is effected by one company by employing rubber drill-pipe protectors on various surface fittings and lines.

At points where throbbing and mud-pump vibrations tend to cause excessive wear to the rotary hose or other flexible hose couplings and lines around the drilling equipment, split protectors are slipped over the points of contact. Derrick girts, railings and sharp floor edges are among common points of wear at which the easily installed protectors are used.

Salvaged drill-pipe protectors, slipped around mud line at points of contact, absorb vibration.

9. AUXILIARIES

Unitized Compressor Powers Small Tools

TO DRIVE auxiliary equipment on a power rig, a small compressor is frequently employed, with air hose to the separate units. Such a power unit may be built around an 8-foot length of 12-

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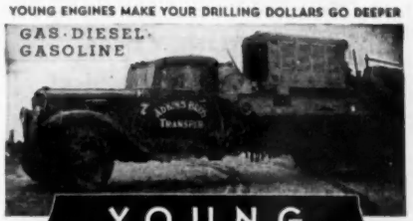

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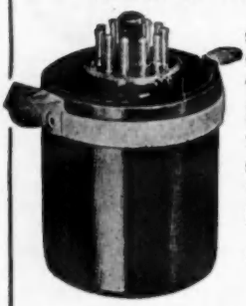

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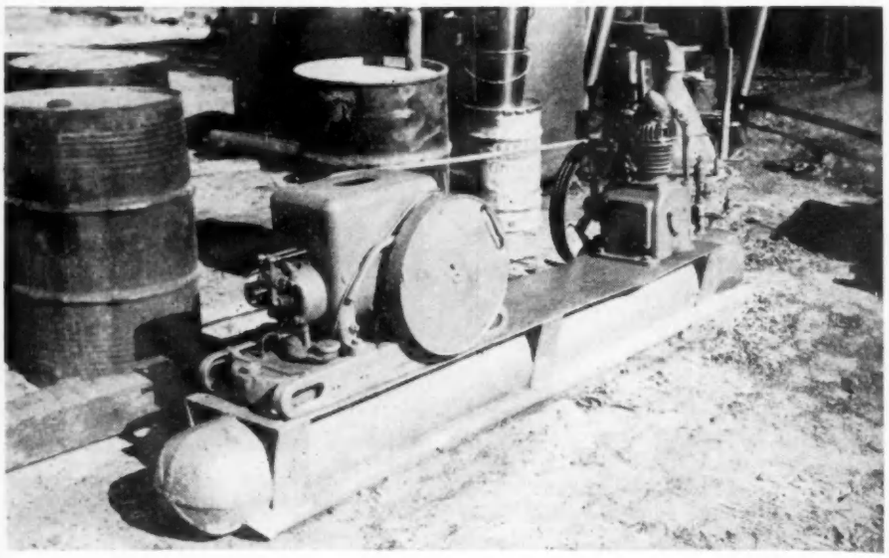

Orange-peel ended pipe section serves as storage tank for compressed air and likewise becomes backbone for the assembly of single-cylinder engine and V-belt driven compressor unit.

inch pipe as receiver, with two lengths of 2-inch pipe welded along the sides of the larger pipe to provide secure footing, and also to take the wear of skidding and transporting the unit. A flat plate, welded atop the 12-inch pipe and braced to the skid members at intervals, serves as mount or base for the single-cylinder engine and the belt-driven compressor.

By notching the bedplate longitudinally at the location of the four bolts holding the engine skid in place, it is possible to shift the entire power unit laterally to secure the desired tension in the V-belt drive to the compressor.

The compressor discharge is tied into the base, which serves as cooler and settling tank, the outlets for the distribution lines being either tapped into the tank wall, or carried on the same fitting as is the pump discharge.

10. WATER SUPPLY

Self-Contained Unit Assures Floor Flow

SEPARATE pumping facilities for the wash-down and mud make-up water are usually provided on mechanical rigs so that the flow will not be dependent upon the operation of the main power plant.

By mounting the check or relief valve on the pump discharge above the suction header, and with waste pipe emptying in sight of the driller's stand, flow through the outlet is evidence of pump operation or, if the stream does not appear when outlets at the rig are closed, the unit needs servicing either at the foot-valve strainer or mechanically.

Unitized self-priming water pump with loaded overflow, visible from derrick floor, provides wash water regardless of operation of main units and insures adequate supply for maintenance work.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

FOREIGN oil continued as the almost-exclusive subject of petroleum discussion in Washington last week, with Administrator Harold L. Ickes, meeting the challenge of the industry to carry the Saudi Arabian pipe line issue to the public, going on the air to answer the charges against his Petroleum Reserves Corporation.

PIWC and IPA made public the highly caustic report prepared for the latter organization by George A. Hill, Jr. Ickes answered its charge of "fascism" by listing PRC's board of directors, which admittedly includes some of the most conservative men in the administration, but in his limited time on the radio was unable to answer the many allegations of the industry in detail.

In the domestic field, the only important development was the start of deliveries at Linden, New Jersey, by the Little-Big-Inch pipe line, whose jinx was

PIWC Wants Roosevelt to Check Oil Agreement With Senate

Ickes Praises Oil Industry for Producing Gasoline Volume

Conference Designed to Iron Out British-U. S. Oil Wrinkles

By B. F. LINZ,
Washington Correspondent

☆ ☆ ☆ ☆

active to the last, holding up deliveries for some 16 hours by the burning of a storage tank.

PIWC Issues as "White Paper" Charges Of "Fascist Approach" Against PRC

Following up its attack on Petroleum Reserves Corporation, the Petroleum Industry War Council early last week issued as a "white paper" the report prepared for the Independent Petroleum Association by George A. Hill, Jr., on foreign policy, which was approved by the council at its March meeting.

Bristling with charges of "the fascist approach," "secret maneuverings" and "power politics," the report analyzed the United States' foreign oil policy in the past and compared with it new policies which it charged PRC is attempting to put into effect, and, the council said, "reflects the opinion of the petroleum industry generally."

Assailing the Saudi Arabian pipe-line project, the report characterized PRC's activities in that field as "the fascist approach—the cooperative state, with its lust for imperialism—the shackling of free American enterprise, not to better serve, but to displace private enterprise, at not only the risk, but with the certainty, of international political involvement.

"Power Politics"

"It is a sign-post of the new highway of international power politics not yet revealed to and approved by the Senate of the United States as an international commitment entered into with 'the advice and consent of the Senate,'" it was declared.

"A comparison of the new fascist, or corporative state approach to the postwar world indicated by the direct engagement of the United States government in the oil business and probably in other phases of private business in defiance of the American way of life for which we are fighting this war parallels the almost fatal new departure in foreign policy made at the end of World War I, in the decision to scrap our then new and building battle fleet at the Washington Naval Conference.

"It will be a mistaken policy no less portentous than the scrapping of the fleet, because it is the scrapping of the internal strength of America itself.

"It represents a new philosophy that we, a democratic people, having girded our sinews of war successfully on the basis of private enterprise and the American way of life, must needs revert to the hated procedure of the nazis and fascist in our postwar world and commit to government (in fascist fashion) direct engagement in the conduct of private enterprise, in surrender of freedom and the American system of free private enterprise."

The introduction of PRC into the government organization, Hill revealed, focused the attention of oil men throughout the country on the question of foreign policy.

"The secrecy surrounding the creation of Petroleum Reserves Corporation, the implication arising from the name ascribed to it, its vast charter powers, the amendments to its charter, the composition of its directorate, the conflicting reports with respect to its non-activity, on the one hand, and its varying activities on the other hand, and the non-disclosure of its purposes and objectives by authentic sources over a period of months, provoked widespread discussion and speculation," he said.

"As a result, members of the oil industry, in common with our citizenship in general, became increasingly interested not only in United States foreign policy in general but also United States foreign oil policy in particular."

Hill charged that the PRC project is definitely indicative of "an inter-allied postwar dispute in the very midst of the present war."

None of the three Axis powers owns any oil reserves in the Middle East, he pointed out, but all reserves, refineries and facilities are in the exclusive possession of Allied nationals—American, British, Dutch and French.

"So," he asserted, "it is not a problem of elimination from the Middle East of the aggressor nations."

Further, he explained, Iraq, Iran, Bahrein and Saudi Arabia combined produced last year but little more than 4 percent of the world oil output. "It is therefore obvious," he concluded, "that this is a division and dispute among allies, not in the field of future collective security but in national commercial rivalry wherein opposing allied interests are being arrayed, one against the other."

If the United States is "legitimately concerned" about the future availability of oil belonging to its nationals in this area during the postwar era and for the next world war, Hill suggested, our present national concern be as to what nations are expected to be bound to us as allies in the next war, with what nations are we to make agreements for collective security, in what areas will the United States undertake to enforce an enduring peace by military and naval policing end, if any area is to be under our military protection, what can be secured in the way of naval, air and military bases in strategic locations.

"The American public is confidently expecting the President to submit all international agreements to the Senate of the United States for its consent and approval," Hill asserted. "It hardly expects Petroleum Reserves Corporation to arrogate to itself the functions of the President and/or the Senate."

The industry's charges were answered by Ickes in a radio address March 7, in which he declared that by failure to develop the Middle East concessions now "we will be jeopardizing the future of our country and impairing its prosperity and well-being."

This is one of three aims which should be prosecuted with all vigor, he said, the other two being to find more oil in this country and to learn as much as possible about making oil from coal and shale.

It is the American participation in the Middle East oil fields in the future which gives him concern as a public servant, Ickes said. And, he added, while some may seek to create the impression that the government and the oil industry are arraigned on opposite sides on the pipe-line proposal, "actually the oil industry is itself divided" and "those private interests which stand to benefit for themselves oppose it. For myself, as a representative of the public, I am interested in doing what we can the better to assure this nation's oil future."

The PRC head referred to charges that the pipe line is a "fascist undertaking," pointing out in reply the conservative nature of its directors—Secre-

tary of State Hull, Secretary of War Stimson, Secretary of the Navy Knox and Foreign Economic Administrator Leo Crowley.

"No policy has been arrived at and no act undertaken by PRC without full discussion and the unanimous action of this highly conservative board of directors, everyone of whom believes in American initiative and free enterprise with all his heart," he said.

Declaring that activities of the agency purposely have been restricted to areas outside of the United States, so there can be no interference with the domestic oil industry, Ickes briefly outlined the highlights of the pipe-line contract and asserted that "I do not believe that any one could question the soundness of this agreement from a financial standpoint.

"As to the charge that the project will put the government into the oil business," he said, "I want to emphasize that this government has no such desire and no such intention. While it is the purpose to complete this pipe line and thus make it possible for three American companies to enter the markets of the world on a free and competitive basis, which is their right, the PRC will have no voice in the business policy of any one of the three companies.

"We would own no stock; we would have no representative on any of the boards of directors; we would have no one on the staff of any of the three companies. How then can it be alleged seriously that by building a pipe line we would be entering the oil business? If this is government in the oil business, then we are likewise in the oil business when we build roads over which tank trucks transport petroleum products."

PRC also was the subject of discussion at the Capitol, where Secretary of the Navy Frank Knox told the House Foreign Affairs Committee March 9 the pipe line is a military necessity and essential to prevent the draining of vast amounts of oil from our own dwindling reserves.

The pipe line was brought up by Chairman Sol Bloom of New York during Knox's appearance in behalf of extension of the lend-lease act, and the Secretary explained that it is part of an effort by the government to provide for the acquisition of outside sources "for the safety and security" of this country.

"We're going to look into oil reserves all over the world," Knox declared. "We are building a pipe line into China now. This is the same thing. It is a military necessity."

At the other side of the capitol on March 10, Senator E. H. Moore of Oklahoma, co-author of the resolution for investigation of PRC and the oil situation, issued a lengthy statement originally prepared as a speech from the floor of the Senate, in which he charged the pipe line with being part of a "vicious and premeditated plan of the administration to socialize the American oil industry."

"The procedure that has been adopted is so obviously dishonest that it warrants condemnation by the Congress and by the people of the United States," Moore asserted, declaring that the pipeline project followed a stream of propaganda from PAW and other agencies to the effect that the oil resources of this country have been exhausted and our people are faced with an immediate oil famine.

The Petroleum Industry War Council is having copies printed of George A. Hill's "White Paper." Copies may be had by writing the Council at 1625 K Street, N. W., Washington 6, D. C.

The Senator charged that there are two reasons for Ickes recent announcement that he will continue his pipe line plan until he is stopped: "First, he has been directed by the White House; and second, he is a willing puppet."

Impeachment of Ickes was suggested by Moore on the basis of his alleged failure to keep his pledge to the Truman Committee that any program adopted by PRC would be presented to congress for consideration. "In complete and insulting disregard of the Congress, the administration is plunging ahead before the Congress shall have had an opportunity to consider the matter and express its opinion," he charged.

Summarizing the production history of the oil industry over the past quarter century, Moore declared that "a review of our petroleum situation can lead to no other conclusion but that the Petroleum Reserves Corporation is an unwarranted scheme of the administration to socialize the oil industry and continue its program of fascist corporations in competition with every phase of private enterprise.

"The organization of PRC," he said, "sprang from the White House as a factor in the scheme to create a postwar transportation monopoly in the air and by water and it would strip the domestic industry of badly-needed material and equipment and further emphasize the shortage propaganda."

Moore urged that the Senate Audit Committee take prompt action on the resolution for investigation, "in order that the Congress may proceed with its investigation of PRC before additional secret international commitments are made without the consent and advice of the Senate.

"The American oil companies involved," he concluded, "should also understand that they are proceeding in this matter at their own peril, without any assurance that the project will be approved by the Congress."

IPAA Directors Will Meet in Pennsylvania

The mid-year meeting of the board of directors of the Independent Petroleum Association of America will be held in Bradford, Pennsylvania, April 27, 28, and 29.

At the same time, a joint meeting of the directors of IPAA and the National Stripper Well Association will be held.

Special emphasis will be placed on field practices in secondary recovery at the Bradford meeting. A tour of engineering and core-analysis laboratories in the Pennsylvania area to see tests made on sand to determine its susceptibility to water flooding also is planned.

"Order of Urgency" Plan Set for Tubular Goods

Deliveries of oil-country tubular goods from mill and field stocks will run between 30,000 and 35,000 tons for the current quarter, as against plans of PAW and WPB for about 40,000 tons, and 35,000 tons probably will be delivered during the coming quarter, the WPB Petroleum Equipment Supply Distributors Industry Advisory Committee was told last week by Frank A. Watts, PAW director of materials.

Discussing the important part played by the oil-field-supply companies in the producing branch of the industry, Watts warned that during the present transition period of moving from a serious shortage of drill pipe and tool joints to a balanced supply of those items, the distributors frequently will be called on "to act as a referee to determine the relative essentiality of orders placed by petroleum operators."

"The fair and impartial performance of this assignment will make it possible for drill-pipe producers and tool-joint manufacturers to make deliveries in the order of their urgency," he said. "PAW has directed tool-joint manufacturers and requested drill-pipe producers to fill the oil operators' delivery orders in sequence of urgency until the supply and demand of these items reaches the point where this practice is no longer necessary. The open-minded participation and wholehearted cooperation of the oil-field-supply company will make it possible to fill practically all—if not all—orders for either or both drill pipe or tool joints without detrimentally delaying any drilling operation."

Through the mill and field stocks of casing, tubing and drill pipe set up by PAW at strategic points, Watts told the distributors, it is now possible to maintain an adequate stock of those sizes and grades required to supply the emergency field needs of production operators.

"Regardless of how well balanced supply and demand are for drilling machinery or oil- and gas-well producing equipment," he said, "no petroleum production program can be successfully carried forward unless there is readily available an adequate supply of the million parts that the petroleum operator obtains from the oil-field-supply companies. Particularly is this true when the program is one which, of necessity, is accelerating at the rate it has been necessary to step up this country's well-drilling and oil- and gas-producing program.

"For the acquisition and maintenance of stocks of these items of essential material, the supply company relies on the wholesale and retail trade division of the War Production Board, which provides a WPB home for the oil-field-supply company. This division has recognized the increasing military and other essential demands for petroleum products and has realized that the petroleum industry—particularly the production branch, and to a steadily increasing extent the natural-gas and gasoline, transportation, refining and distributing branches—cannot conduct programs which will supply petroleum product demands unless materials are delivered in adequate quantities to meet these requirements. The wholesale and retail trade

division has worked hand in glove with the oil-field-supply company to enable it to dispatch its assigned responsibility of supplying a balanced and adequate stock of materials for steadily increasing petroleum operations."

Wire rope and internal-combustion engines were described by WPB officials as being in extreme competition with direct military orders and therefore cannot be expected to be any more readily available at present.

Drill pipe and tool joints, WPB said, are being produced at the limit of industry capacity and are going through a transition period from inadequate supply to a quantity large enough for actual operating needs. Ten million feet of drill pipe and 300,000 tool joints will be produced in 1944, WPB said.

Whitman Named Director Of OPA Fuel Rationing

Appointment of A. R. Whitman, formerly deputy director of the Office of War Information in charge of gasoline and fuel oil information programs, as director of the fuel rationing division of the Office of Price Administration was announced March 8 by Colonel Bryan Houston, deputy administrator for rationing. Whitman will succeed Joel Dean, who has resigned.

Houston also announced that four men from the oil industry would be added to the OPA rationing staff, two to serve as consultants to Whitman and the other two as consultants to Charles F. Phillips, director of the automotive supply rationing division, which includes rationing of gasoline.

Consultants will be L. V. Nicholas of Evanston, Illinois, formerly head of the Warner Quinlan Company, New York distributors, and also consultant to Cities Service Company; Harry Spears of Wheeling, West Virginia, formerly with Standard Oil Company (Ohio) and operator of his own petroleum jobbing business; A. William Rowe of Boston, district manager for Cities Service Company, and Q. W. Regestein, of Newark, sales manager in New Jersey for Socony-Vacuum Oil Company.

PAO-1 Extension to Nation May Mean Early Revision

Extension of PAW's PAO-1, providing for equitable sharing of available oil supplies among secondary suppliers, to cover the entire country, is under consideration as a move to equalize supply conditions nationally during the period of heaviest military requirements, expected when the invasion of Europe actually gets under way.

At present, the order applies only to the East Coast, where it has not met with unqualified approval. Objections to the order as now written are based principally on its failure to provide for all-embracing interpretations and the consequent confusion which arises from time to time when unusual situations occur.

The extension of PAO-1 nationally is expected to be accompanied by a thorough-going revision of the order to eliminate this and other difficulites. A proposed draft of the order has been circulated among the various committees, which now have it under discussion with a view to submitting recommendations for improvement before final action is taken.

Anglo-American Conference on Oil Would Eliminate Chance of Friction

Plans to hold an Anglo-American conference on oil problems, in the course of which the discussions may be extended to include other countries, were announced simultaneously March 7 in London and Washington.

Objective of the conference is understood to be an assurance that petroleum shall not lead to friction between England and America, and on that premise PRC's plan to engage in the development of Saudi Arabian resources is seen as one of the major questions to be discussed, with the possibility that the conversations will lead to an agreement that the two countries will not compete in either the acquisition or marketing of petroleum.

Announcement of the conference was made in Washington by Acting Secretary of State E. R. Stettinius, Jr., who said that preliminary technical discussions would first take place in the United States.

Stettinius disclosed that President Roosevelt has appointed a group to participate in those discussions, to be headed by Secretary Cordell Hull as chairman and Secretary Ickes as vice-chairman, other members being Under-Secretary of War Robert P. Patterson, Under-Secretary of the Navy James V. Forrestal; Charles Rayner, State Department petroleum adviser, and Charles E. Wilson, vice chairman of the War Production Board. John A. Loftus, re-recently appointed by the State Department as a specialist on international petroleum, also is expected to attend.

The acting head of the State Department said that any decisions reached by the conference with respect to producing areas would be taken only after consultation with the governments of the countries concerned. The United States, he said also, will welcome similar discussions with the government of any other friendly country having oil questions of mutual interest.

Stettinius pointed out that the United States and England have discussed oil matters over the past decade, but that it is hoped talks on a cabinet level would follow immediately after the technical questions have been settled.

Reportedly, the British government is prepared to enter into an agreement which would preclude any possibility of oil matters becoming the basis of friction between it and the Washington government, but there has been no hint of any proposal for joint ownership of oil resources. Rather, it is said, the idea is that neither country shall support its nationals against those of the other in fields where competition between them might lead to controversy.

Under such an agreement, certain areas would be considered as primarily American and others as British for purposes of exploitation. Marketing areas also might be similarly treated, but in neither case would the compact be used as a weapon to keep other countries out of the field. Through such an arrangement the Saudi Arabia development might be considered as within the American sphere of operations, although the official British view on the PRC pipe line project has not yet been disclosed.

Discussions between the two governments will be based on the thesis of conservation and proper use of the world's petroleum resources. This is a matter of first importance in both countries—the United States because of present threat of dwindling domestic supply and to England because she is entirely dependent upon outside resources.

Stettinius' announcement, however, did not serve to allay the opposition of the industry to government participation in the oil business, as indicated by PRC's activities, but did open up an additional field for investigation by the four-committee Senate group which shortly is expected to probe the whole oil situation under the Brewster-Moore resolution.

The several attacks against PRC by the Petroleum Industry War Council have never been formally answered by any government official, and no light has been shed on the questions raised as to how the United States would protect its Saudi Arabian investment in the event of difficulties with native governments or in the case of another war, nor as to the legal status of PRC which, created under legislation of only temporary character, is, by its contract with the companies owning the reserve, committing the government to a 50-year project.

Davies Lists Two New District 2 Committees

Make-up of the new industry supply and transportation committee and distribution and marketing committee for District 2 was announced by Deputy Administrator Ralph K. Davies last week, with E. G. Seubert of Chicago as chairman of the former and B. L. Majewski of Algonquin, Illinois, head of the latter.

The two committees supersede the former transportation and marketing committees which dealt with problems of transportation, supply, distribution and marketing prior to the recent realignment of the PAW transportation, supply and marketing divisions.

Membership of the two committees was announced by Davies as follows:

"Supply and transportation committee—E. G. Seubert, Standard Oil Company., (Indiana), chairman; N. C. Beis, W. H. Barber & Company; Reid Brazell, Leonard Refineries, Inc.; D. D. Irwin, Pure Transportation Company; C. H. Kountz, Sinclair Refining Company; C. R. Musgrave, Phillips Petroleum Company; H. L. McReynolds, Socony-Vacuum Oil Company; J. L. Nolan, Farmers Union Central Exchange; A. W. Peake, Standard Oil Company, (Indiana); C. A. Prichard, Anderson-Prichard Oil Corporation; Ross K. Schoolroy, Fair Price, Inc.; E. E. Smith, Smith Oil & Refining Company; L. A. Snyder, Champlin Refining Company; S. A. Swensrud, Sohio Pipe Line Company; Otto Wanek, Cleveland Tankers, Inc.

Distribution and marketing committee—B. L. Majewski, Deep Rock Oil

Corporation, chairman; H. T. Ashton, Socony-Vacuum Oil Company; Amos Ball, Standard Oil Company, (Indiana); Howard A. Cowden, Consumers Co-operative Association; R. E. Decker, Plymouth Oil Company; D. O. Groce, Groce Independent Oil Company; Leland L. Harns, Harns Oil Company; Arthur M. Hughes, Phillips Petroleum Company; Harry J. Kennedy, Continental Oil Company; R. R. Kibbe, The Texas Company; P. E. Lakin, Shell Oil Company; R. W. McDowell, Mid-Continent Petroleum Corporation; A. A. Stanbaugh, Standard Oil Company of Ohio; C. B. Watson, The Pure Oil Company, and Phil T. Williams, Gaseteria, Inc.

East Coast Entering Critical Fuel Period

The East Coast is entering the most difficult period of the year from the standpoint of fuel oil supply, and OPA has been compelled to refuse to advance the valid date of Period 5 ration coupons because of the lack of adequate supplies.. PAW disclosed last week that three metropolitan areas already have been in difficulty with New York down to a two-day supply before steps could be taken to divert oil from other points.

Operation of the Little-Big-Inch pipe line is looked to avert a breakdown in supply, but it was pointed out that the chief beneficiary of the added transportation provided by the line will be the military.

Inventories of East Coast civilian supply of gasoline, kerosine and heating oils declined slightly during the week ended March 4, while stocks of residual industrial oil movement into District 1 during the week included 744,572 barrels by tank car daily and 540,988 barrels by all pipe lines.

"Military needs for transportation are constantly expanding and we are relinquishing to the military more and more oil transportation capacity normally used for civilian movements," Deputy Administrator Davies explained, in outlining the situation. "As an example of how extensive their requirements are, even some lake barges, used for inland waterway transport of oil, have been requisitioned by the military."

First Deliveries From Little-Big-Inch Line

First results of the government's $75,000,000 Little-Big-Inch products line from Beaumont, Texas, to Linden, New Jersey, became apparent March 2 when the 95,000 gallons of gasoline moving on the heels of the test water arrived at destination, with heating oil which followed coming through two days later.

The line's initial run of between 120,000 and 125,000 barrels of heating oil daily, shortly will be stepped up to 150,000 barrels and eventually will reach a maximum of 180,000 barrels of fuel oil or 225,000 barrels of gasoline a day.

Even with the new facility delivering fuel oil at a rate equivalent to that of 10,600 tank cars in the Gulf-East Coast run, Administrator Ickes warned that the situation of Eastern consumers was not materially improved.

President Asked to Quit Strangling Industry; 50-Cent Increase Needed

Directors of the Independent Petroleum Association of America, Friday, in an informal letter addressed to the President of the United States asked him for adjustment of price ceilings on crude oil and its products so as to permit the industry to function in a manner that will provide products so necessary to the safety and welfare of the nation.

Other developments at the four-day conference of directors and committee members of the IPAA and the National Stripper Well Association, held in St. Louis, included:

1. A resolution renewing Association opposition to government entry into the oil industry generally and urging that Congress take action cancelling the contract between the Petroleum Reserves Corporation and the American Arabian Oil Company and the Gulf Exploration Company, and dissolving the Petroleum Reserves Corporation.

2. Discussed all forms of price relief, incentive proposals, subsidies and bonuses submitted by members of both associations and the informal suggestions from OPA.

Directors unanimously confirmed previous statements that the effective and efficient way to take care of increased operating and development expense is an overall price increase.

"While a year or more ago a 35-cent per barrel increase might have been sufficient, it will take not less than 50 cents per barrel hike at present because of increased expenses and costs since that time," a joint statement of both associations said.

"In eager anticipation of the demise of the domestic oil industry," the letter said, "departments of government have spent millions of dollars of the taxpayers' money drilling wells and developing oil in foreign countries, while denying the domestic oil industry a price for its oil sufficient to pay the cost of replacement.

"Still other departments of government under your control are preparing, without objection from you, to spend hundreds of millions of dollars building pipe lines in other foreign countries.

"One department subject to your order is now making plans to spend millions of dollars of taxpayers' money to finance government oil drilling upon the public domains in Alaska, at a point where the sea lanes are open to shipping only six weeks in each year.

"This course, so persistently pursued, of strangling an essential industry endeavoring to produce an adequate supply of a vital commodity, while at the same time the government is spending the taxpayers' money to enter into the very business it is throttling, is contrary to our form of government and is a process leading inevitably, if not stopped, to socialized government monopoly."

The pessimistic attitude of the United States government regarding crude-oil reserves in this country, and its determination to participate in the oil business abroad, were attacked by Ralph T. Zook, president, in his opening statement.

"What is needed now," said Zook, "is the same consideration for domestic oil production that the government is extending to the foreign field. If we could get the manpower, material and price, the industry at home could amply provide the necessary reserves of crude oil to build up our supplies and end the gasoline shortage at the same time."

Zook asserted that the industry can manage price problems on the home front, but that "when the government goes into business against us with such projects as the Arabian pipe line, it is doubtful if we can survive."

He denied that any group of American oil producers would welcome government intervention in the oil business in any form, and added that any such intervention would ruin the oil-producing system built by private enterprise that has been winning the war for the Allies.

"The proposed pipe line in Arabia," he said, "will not mean one barrel of oil for the United States, nor will it help in any way to win the war . . . in fact, it will create the actual possibility of another war."

More than 125 members of the board of directors of the two associations attended the meeting.

Refinery Expansion Gives Fuel for Air Offensive

Nearly two thirds of the great increase in output of 100-octane aviation gasoline achieved in the two years following Pearl Harbor was obtained from refineries operating at the outbreak of the war, which in 1942 and 1943 more than doubled their production, it was disclosed by Administrator Ickes March 11.

"Our situation," Ickes explained, "was so desperate we couldn't wait for new plants to be built. So, in spite of the fact that 41 major units were completed by last December 31, only 35 percent of our increased production since Pearl Harbor and 20 percent of the total output of 100-octane in 1942 and 1943 came from the new plants. For the rest we must credit the ingenuity of the petroleum industry. Without it our tremendous air offensive would never have been possible.

"Few people realize the complexity of the equipment required for the intricate processes of molecule splitting and regrouping involved in making the superfuel our Air Forces need. The average 100-octane plant takes as long to construct as one of the Navy's Essex type of aircraft carriers, it required more man hours than to build two destroyers, and more carbon steel, bar, plate and structural steel than a cruiser."

Of the 64.5 percent contributed by existing refineries to increased production, PAW estimated that 22.8 percent was secured through use of cumene as a blending agent, 14 percent through mechanical improvements, 13.8 percent through conversion of catalytic-cracking units, 9.1 percent through the use of codimer as a blending agent, 3.5 percent from the addition of 0.6 cubic

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centimeter of tetraethyl lead, and 1.3 percent through the use of toluene and other blending agents.

The number of "cat" crackers converted to aviation fuel was not given.

Early in 1942 it was found that conversion of existing equipment would permit the production of a substantial volume of codimer which, through hydrogenation, could be converted into hydro-codimer. The first unit was converted in February, 1942, and by the third quarter of last year 65 plants had converted their codimer facilities.

Also early in 1942 it was found that cumene, made from benzol and petroleum gases, had a highly beneficial effect in improving certain operational characteristics of 100-octane and that substantial quantities could be obtained quickly by a slight modification of existing equipment. The necessary benzol was available even after all other critical requirements had been satisfied, and by the middle of 1942 cumene production was under way. Nearly 23 percent of the increase in 100-octane output during the two years was made possible by this step alone.

Another agent which may prove increasingly important was found in toluol, of which there was some available after the requirements of Army Ordnance had been met. To these supplies were added certain other secret blending agents, at least one of which, it was said, has far-reaching potentialities for improving still further the engine performance of our planes, should the need arise.

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Says Science Multiplies Petroleum Resources

What might be expected from further technological advancements in helping to increase oil production and known reserves was pointed out March 9 by Dr. Robert E. Wilson, president of Pan American Petroleum and Transport Company at the Galveston Chamber of Commerce March 9 when he spoke on "Technology as a Multiplier of our National Resources."

In his speech which was a part of the dedication program of the new fluid catalytic cracking unit of the Pan American Refining Corporation at Texas City, he cited the record of steadily mounting production and increasing known reserves over the last two decades, all contrary to predictions and warnings. While these were not offered as assurance of future reserves, they were pointed to as evidence of what technological developments have accomplished and a basis for expecting them to continue this contribution.

"Our nation last year," he said, "supplied nearly 80 percent of the war oil requirements of the United Nations with crude production 7 percent higher than in any previous year and yet our proven underground reserves at the end of the year were only 0.1 percent lower than at the beginning.

"With such a record of achievement why should we today revert to a pessimism similar to that prevailing 25 years ago?

"Considerable question has been raised with regard to the propriety of repeatedly revising upwards the proven reserves in old fields and such additions are frequently discounted as mere 'pencil discoveries.' However, many of these additions reflect the discovery of new horizons or extensions, and others reflect the proven result of better producing methods or secondary-recovery methods. Such figures therefore represent real additions to the proven reserves on which we can definitely rely.

"I think it may safely be concluded that if we had to continue to rely on the 1918 techniques for discovery and the 1918 general practice in drilling and production, our industry would be either moribund or we would have been forced long ago to high-cost substitutes."

Says OPA Policy Bad For New Development

Maintenance of petroleum supplies for war and protection of the nation's oil reserves depend on an increase in the crude oil price structure, Henry M. Dawes, president of The Pure Oil Company, says in his annual report to shareholders.

The government has not recognized the fact that costs have increased to such an extent that the oil industry as a whole is being forced to spend more money in producing crude oil than it gets back in selling it, Dawes pointed out.

Tanker Construction

Twenty-two tankers were among the 134 vessels delivered by American shipyards during February, the Maritime Commission has reported. Included were 15 standard tankers, two Naval tankers, two emergency tankers converted from Liberty ships, and three coastal tankers.

Fuel Oil Production and Stocks Decline While Too Little Gasoline Is Stored

Increasing difficulty in meeting the recording-breaking demands for petroleum products was emphasized by the latest weekly statistics of the industry, released by the American Petroleum Institute and the Bureau of Mines.

Production of crude oil declined somewhat and crude runs to stills were cut back in the week ended March 4, in reflection of declining oil producing ability in some districts and trouble in other districts in adapting refining facilities to available crudes not hitherto refined. Meanwhile, it has continued necessary to draw on crude storage in maintaining refinery runs even at the current inadequate rates.

With less crude being charged to stills, production of both light and heavy fuel oils decreased in the week of March 4, and it was necessary to continue drawing heavily on stocks of those products. Production of gasoline showed some increase, but output was not large enough to permit a normal addition to stocks.

U. S. production of crude averaged 4,413,000 barrels daily in the week of March 4, down 10,000 from the previous week, but only 23,000 under the record week, at the middle of last November. The production was 13.5 percent higher than in the corresponding week last year.

Crude was taken from storage to the extent of 374,000 barrels in the week ended February 26, an average of 53,000 daily. The remaining stocks of 237,137,000 barrels compared with 235,217,000 barrels held at the corresponding date last year.

Crude runs to stills averaged 4,344,000 barrels per day in the week of March 4, down 33,000 from the previous week but approximately 750,000 barrels daily or 21 percent above the runs in the like week a year ago, at which time heavy military demand was just beginning to be felt.

Production of gasoline continues to show phenomenal increase over the year-ago trend. Output of 13,267,000 barrels in the week ended March 4 was 3,233,000 barrels or 32.2 percent greater than that in the corresponding week last year. The new daily average rate of production was 462,000 barrels above that a year previously and 12,000 higher than in the preceding week. Stocks of finished and unfinished gasoline increased 843,000 barrels during the week to 86,091,000 barrels, but then were 6,674,000 barrels or 7.2 percent short of the year-ago level.

Gas oil and distillate fuel production totaled 4,513,000 barrels in the week of March 4, down slightly from the previous week but 18.5 percent above the like week last year. On a daily average basis, the production was down 6000 barrels for the week but up 100,000 barrels from a year previously. Stocks were drawn upon to the extent of 90,000 daily, and after declining to 33,145,000 barrels were about 1,000,000 barrels or 2½ percent lower than on the corresponding date last year.

Residual fuel oil production totaled 8,590,000 barrels in the week of March 4, an average of 1,227,000 daily. That was 52,000 barrels per day less than production in the previous week but 224,000 barrels a day, or 22.3 percent more than that in the like week last year. Stocks of residual were reduced 30,000 barrels daily and on March 4 stood at

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED March 11	March 4
Alabama	25	25
Arkansas	79,300	78,800
California	824,600	825,750
Long Beach	29,950	29,850
Midway-Sunset	56,100	56,650
Kettleman Hills	42,800	43,900
Wilmington	102,400	103,000
Rest of State	593,350	592,350
Colorado	8,250	7,250
Florida	45	50
Illinois	219,300	215,600
Salem	25,800	25,300
Louden	35,600	33,000
Other New Pools	147,300	145,200
Old Pools	10,600	12,100
Indiana	13,160	13,150
Kansas	263,200	272,800
Kentucky	23,050	19,500
Louisiana	360,500	359,700
North Louisiana	76,500	76,000
South Louisiana	284,000	283,700
Michigan	52,500	52,100
Mississippi	43,300	44,200
Missouri	100	100
Montana	23,870	24,850
Nebraska	1,240	1,190
New Mexico	113,050	113,050
New York	13,800	14,550
Ohio	9,100	8,550
Oklahoma	328,300	327,600
Oklahoma City	47,000	46,700
Seminole Area	69,450	68,250
Rest of State	211,850	212,650
Pennsylvania	43,100	40,850
Tennessee	30	30
Texas	1,863,550	1,886,000
Upper Gulf Coast	513,750	515,100
East Texas Field	365,000	375,750
Rest of Eastern Texas	116,800	116,800
Lower Gulf Coast	197,000	195,500
Southwest Texas	74,800	75,350
South Central Texas	20,000	20,000
West Texas	341,000	349,200
North Texas	142,500	141,500
Panhandle	92,700	96,800
Utah	12	12
West Virginia	8,800	8,300
Wyoming	93,100	93,850
Total United States	4,385,282	4,407,857

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gasoil and Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	[1]4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	46,187	11-27	72,881	1- 2
1944	4,423	2-26	[1]4,453	1- 1	240,992	1- 1	86,091	3- 4	42,310	1- 1	57,330	1- 1
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	237,137	2-26	76,302	1- 1	33,145	3- 4	51,175	3- 4

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,152	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,838
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	[1]4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 5	4,400	4,324	239,145	13,192	81,784	4,138	36,023	9,087	52,734
February 12	4,399	4,228	238,206	13,101	82,322	3,946	34,854	9,000	52,453
February 19	4,385	4,404	237,511	13,526	83,931	4,331	33,809	8,881	51,948
February 26	4,423	4,377	237,137	13,183	85,248	[4]4,558	33,766	8,952	51,387
March 4, 1944	**4,413**	**4,344**	.....	**13,267**	**86,091**	**4,513**	**33,145**	**8,590**	**51,175**
March 6, 1943	3,887	3,595	[4]235,217	10,034	92,765	3,809	34,005	7,023	69,044
Change:									
In week	—10	—33	—374	+84	+843	—45	—621	—362	—212
In year	+526	+749	+1,920	+3,233	—6,674	+704	—860	+1,567	—17,869
In year	+13.5%	+20.8%	+0.8%	+32.2%	—7.2%	+18.5%	—2.5%	+22.3%	—25.9%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks February 27, 1943.

51,175,000 barrels, A.P.I. basis. That was about 18,000,000 barrels or 26 percent less than the 69,044,000 barrels reported for March 6 last year.

To Start Repressuring Plant for Haynesville

Work is expected to start soon on a repressuring plant to serve the Haynesville field in Claiborne Parish, Louisiana, which has been extended across the Arkansas border. The area, which has been practically drilled up during the past year, produces 10,097 barrels per day from Pettit lime, and 2100 barrels from the old shallow zone.

The new plant will be built in the center of the field. An estimated recovery of 900 barrels of natural gasoline is expected daily and operation of the repressuring system is expected to add over 5,000,000 barrels of oil to ultimate recovery.

The plant has the aproval of PAW, and WPB has granted priority ratings. Contract has been let to Frick-Reid Supply Corporation. J. J. Frommer of Ohio Oil Company is temporary chairman of the Haynesville operators' committee. The cost will be prorated among the producers of the field with a permanent operating agency to be set up later.

Drilling Rate Much Higher Currently Than for the Same Period in 1943

Drilling has been materially intensified this year as compared with the subnormal activity of last year, this being evidenced by trends of well completions and rigs in operation.

In the first two months of 1944, wells were completed at a weekly rate 13.8 percent higher than that for the same months last year, and on March 1 there were 42 percent more wells drilling or rigging up than on the corresponding date a year ago.

In the four weeks ended February 26, well completions in the United States totaled 1610, an average of 402 weekly, compared with 357 weekly in the previous month and 314 weekly in February of last year. The gain over February a year ago was 28 percent, although January showed only a nominal corresponding increase, leaving the net gain for the first two months of this year at 13.8 percent.

February rate of completing wells was approximately 21,000 per year, compared with actual completions of 19,212 in 1943, 21,454 in 1942, and 32,210 in 1941. However, there is almost always an expansion of field work after the first few months of the year, and such seasonal increase is practically certain to occur this year.

Increased drilling over last year is shown by a large majority of states. California's weekly rate of completions has been 52 percent higher this year than last. Other increases include 31 percent for Indiana, 25 percent for Kansas, 112 percent for Kentucky, 19 percent for South Louisiana, 37 percent for Michigan, 71 percent for Mississippi, 76 percent for Missouri, 7 percent for Montana, 37 percent for New Mexico, 8 percent for Oklahoma, 17 percent for Pennsylvania, 42 percent for West Virginia, and 26 percent for Texas. Gains for individual districts of Texas show 76 percent for the East Texas border counties, 14 percent for the remainder of Eastern Texas, 17 percent for North Texas, 13 percent for West Central

Weekly Rate of Well Completions Higher in February Than in January; Up 13.8 Percent Over Last Year for First Two Months

(Figures compiled from weekly reports of editorial staff men, with following exceptions: Arkansas data from Arkansas Oil & Gas Commission; California from A.P.I. except for February; Illinois from Illinois Geological Survey except for February; Indiana form Indiana Division of Geology; Missouri from Missouri Geological Survey; Allegany, New York, and Bradford and Kane-Clarendon, Pennsylvania, from The Producer's Monthly; Tennessee from Tennessee Division of Geology)

	MONTHLY COMPLETIONS: February 1944									CUMULATIVE COMPLETIONS: First 2 Months								RIGS IN OPERATION					
	Details for Feb., 1944					Total Completions				Details Jan.-Feb., 1944					Total Completions				Details for March 1, 1944			Total: Drilling and R.U.		
	New Wells				Old Wells Deepened					New Wells				Old Wells Deepened										
State or District	*Oil	Gas	Dry	Others[6]		Feb., 1944[1]	Jan., 1944[3]	Feb., 1943[2]	Total Footage Feb., 1944	*Oil	Gas	Dry	Others[6]		Jan.-Feb., 1944[4]	Jan.-Feb., 1943[5]	Percent Change in Weekly Average	Total Footage 2 Mos., 1944	Drilling	Rigs Up	Shut Down	Mar. 1 1944	Feb. 1 1944	Mar. 1 1943
Alabama	1					1			2,800	1					1			2,800	3		1	3	2	1
Arizona			1			1			3,850			1			1			3,850	4		2	4	3	
Arkansas	11	1	2			14	11	12	104,074	17	1	7			25	26	— 33.3	164,424	24	3	2	27	26	32
California	113	4	17		5	139	151	79	489,351	235	7	40		8	290	169	+ 52.4	1,036,363	239	55	20	354	340	191
Colorado	1		2			3	2	2	15,858	2		3			5	5	— 9.7	24,173	8		10	8	7	6
Florida																			1			1	1	1
Georgia								1								1	—100.0							
Illinois	71	1	38	1	1	112	132	146	282,222	148	2	90	3	1	244	290	— 23.9	622,558	158	22	12	180	187	185
Indiana	18		13			31	33	21	60,505	36	3	25			64	43	+ 31.5	119,597	35	8	3	43	47	33
Iowa								2								2	—100.0		1			1		2
Kansas	63	3	61		1	128	182	99	419,251	144	8	148	3	7	310	220	+ 25.1	1,008,903	206	39	23	245	241	166
Kentucky	19		20			39	41	16	65,133	36		44			80	34	+111.9	130,577	53	11	5	64	67	64
Louisiana	23	4	23		2	52	45	45	363,410	46	8	39		4	97	87	— 0.9	744,221	79	16	29	95	97	93
North	4	3	12		1	20	10	27	73,973	6	6	17		1	30	37	— 28.3	128,060	35	6	18	41	34	34
South	19	1	11		1	32	35	18	289,437	40	2	22		3	67	50	+ 19.4	616,161	44	10	11	54	63	59
Michigan	19	3	23		1	46	54	34	114,546	44	3	52		1	100	65	+ 37.0	266,090	88	14	18	102	82	53
Mississippi	1		11			12	10	8	59,904	3		19			22	11	+ 71.2	103,828	11	3	6	14	14	10
Missouri		1	1			2	2	1	1,746		1	3			4	2	+ 76.0	2,776	4			4	6	3
Montana	15	1	1			17	26	24	46,762	35	2	6			43	36	+ 6.7	111,988	62	13	17	75	66	19
Nebraska			1			1	6	11	1,970	1		6			7	12	— 20.0	17,663	1			1	1	15
New Mexico	14	2	12			28	35	20	79,265	32	5	26			63	41	+ 37.3	186,194	79	4	20	83	88	50
New York	64	1		36		101	97	75	137,116	122	1	2	73		198	182	— 3.1	272,582	95	14	21	109	99	107
North Dakota																			1		1	1		
Ohio	11	30	21			62	78	59	188,395	27	64	47	2		140	137	— 8.8	409,739	154	22	38	176	181	173
Oklahoma	57	7	37	3	7	111	133	91	372,160	124	19	83	8	10	244	201	+ 8.0	819,197	340	26	17	366	372	225
Pennsylvania	117	14	2	110		243	211	193	413,207	208	33	17	196		454	383	+ 17.5	802,221	240	37	50	277	238	206
South Dakota																			1		1	1	1	
Tennessee	1					1	2		306	1		2			3	1	+166.7	3,157	5		1	5	3	1
Texas	228	9	142	1	11	391	427	276	1,785,746	446	22	326	3	21	818	578	+ 25.9	3,644,403	722	45	123	767	742	489
E. Tex. Border	2		2			4		2	23,188	2		2			4	2	+ 76.0	23,188	7	1	1	8	8	8
E. Tex. Field					1	1		2	152					1	1	2	— 56.0	152						
Rest of E. Tex.	9		11			20	25	23	131,659	18		27			45	35	+ 13.6	290,202	43	6	11	49	44	23
North	44	2	37	1	2	86	89	66	254,131	83	2	83	3	4	175	133	+ 16.9	507,431	137	5	26	142	131	88
West Central	10	1	19		1	31	32	28	73,627	17	2	43		1	63	50	+ 12.9	145,910	53	4	19	57	46	32
West	79		18		5	102	112	60	455,138	161		41		12	214	124	+ 52.6	914,229	310	2	27	312	306	183
Panhandle	12		2			14	14	21	45,906	23	1	4			28	46	— 46.6	92,025	33	7	9	40	39	28
Upper Coast	23	1	15		2	41	38	15	276,686	41	2	33		3	79	36	+ 95.6	554,748	51	9	10	60	59	37
Lower Coast	41	3	23			67	77	32	427,662	78	12	54			144	79	+ 61.6	873,384	52	8	12	60	73	58
Southwest	5	2	9			16	36	19	68,126	19	3	30			52	58	— 19.4	200,072	31	2	4	33	27	23
S. Central	3		6			9	4	8	29,471	4		9			13	13	— 12.5	43,062	5	1	4	6	9	9
Utah																			1		2	1	1	2
West Virginia	8	53	5			66	92	35	161,287	16	125	17			158	99	+ 41.9	399,250	45	6	10	51	34	51
Wyoming	8				1	9	14	19	32,507	20		2		1	23	26	— 21.2	99,174	52	8	18	60	46	23
Total U.S.	863	134	433	151	29	1,610	1,784	1,269	5,201,371	1,744	304	1,005	288	53	3,394	2,651	+ 13.8	11,001,728	2,772	346	450	3,118	2,992	2,201

* Includes distillate wells. [1] Wells completed in 4 weeks, or 28 days, ended February 26, 1944. [2] Wellls completed in 4 weeks, or 28 days, ended February 20, 1943. [3] Wells completed in 5 weeks, or 35 days, ended January 29, 1944. [4] Wells completed in 9 weeks, or 63 days, ended February 26, 1944. [5] Wells completed in 8 weeks, or 56 days, ended February 20, 1943. [6] Water input, gas injection, and salt water disposal wells.

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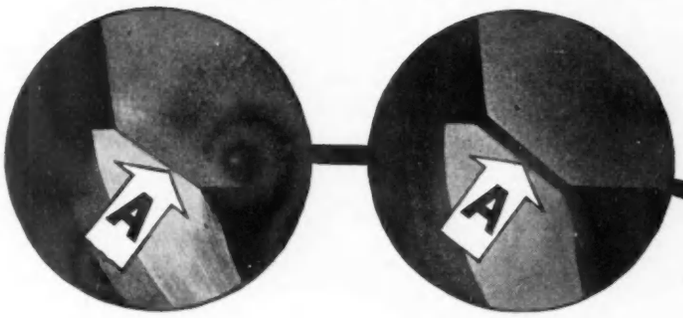
CHECKING THE VALVE SEAT FOR BUSHING WEAR



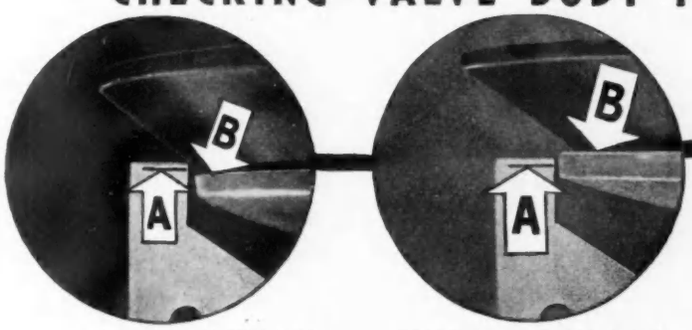
TIME TO CHANGE BUSHING

When the bushing is worn and needs changing, the wear gage touches the sealing surface of the valve seat as shown at (A).

NEW BUSHING INSTALLED

Notice how the wear gage stands away from the sealing surface of the valve seat when the bushing is in good condition. This means long, trouble-free service ahead.

CHECKING VALVE BODY FOR WEAR

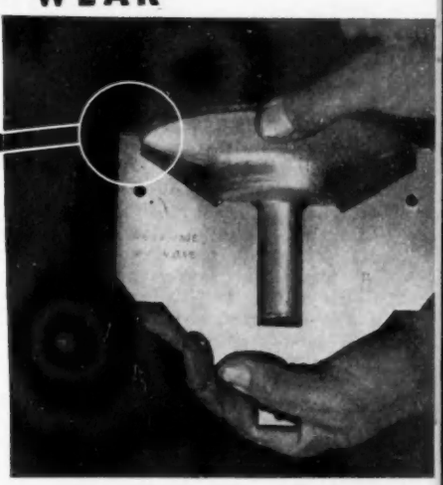


GAGING A WORN BODY

When the body is worn and needs changing, the line on the wear gage (A) is above the surface of the valve body (B) as shown.

HOW GAGE APPEARS ON A NEW BODY

Notice how the line (A) is well below the surface of the body (B). Prompt changing of worn valve bodies results in long insert life and greatest freedom from valve troubles.



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Texas, 53 percent for West Texas, 96 percent for the Upper Gulf Coast, 62 percent for the Lower Gulf Coast.

Contrasting decreases from a year ago in weekly completion rates included 33 percent in Arkansas, 10 percent in Colorado, 24 percent in Illinois, 28 percent in North Louisiana, 20 percent in Nebraska, 3 percent in New York, 9 percent in Ohio, 47 percent in the Texas Panhandle, 19 percent in Southwest Texas, 12 percent in South Central Texas, and 21 percent in Wyoming.

On March 1, 1944, there were 3118 active drilling operations under way, including wells drilling or rigging up. This was a considerable increase over the 2992 active operations a month earlier and an increase of 42 percent over the 2201 active tests on March 1, 1943.

Increases in active operations occurred between February 1 and March 1 in Alabama, Arizona, Arkansas, California, Colorado, Kansas, North Louisiana, Michigan, Montana, New York, Pennsylvania, Tennessee, practically all districts of Texas, West Virginia and Wyoming.

On March 1, 1944, California had 354 wells drilling or rigging up, compared with 191 on March 1, 1943, and gains in other states were: Alabama to 3 from 1, Arizona to 4 from 0, Colorado 8 against 6, Indiana 43 against 33, Kansas 245 against 166, North Louisiana 41 against 34, Michigan 102 against 53, Mississippi 14 against 10, Missouri 4 against 3, Montana 75 against 19, New Mexico 83 against 50, New York 109 against 107, Ohio 176 against 173, Oklahoma 366 against 225, Pennsylvania 277 against 206, Tennessee 5 against 1, Wyoming 60 against 23, West Virginia unchanged at 51, Texas as a whole 767 against 489, Eastern Texas 57 against 31, North Texas 142 against 88, West Central Texas 57 against 32, West Texas 312 against 183, the Texas Panhandle 40 against 28, Upper Texas Gulf Coast 60 against 37, Lower Texas Gulf Coast 60 against 58, Southwest Texas 33 against 23, Kentucky unchanged at 64.

Oklahoma Allowable Less Than for February

March allowables were increased in four and cut in six Oklahoma oil fields by the State Corporation Commission which fixed the month's allowable from allocated areas at 327,000 barrels daily, 1000 barrels under the previous month, at its formal March hearing in Oklahoma City.

Fields where daily allocations were increased included West Edmond, 4600 to 10,900 barrels; Cement, 200 to 5500; Cement-Medrano, 300 to 4800, and Oklahoma City (Velma-Pennsylvania), 50 to 500 barrels.

Allowables were cut in the Oklahoma City field (Wilcox zone), 1000 to 39,000 barrels; West Hewitt, 100 to 1800; Cumberland (Bromide zone) 100 to 2800; (McLish) 200 to 6000; Guthrie, 200 to 1000; Fitts, 100 to 6000 barrels, and Oklahoma City (lower Simpson) 100 to 6700 barrels.

The state's 49 allocated areas have a total allowable of 143,350 barrels daily compared with 139,700 barrels in February. The unallocated areas were granted 183,650 barrels for March compared with 188,300 barrels the previous month.

International Developments

Turner Valley Outpost Is Canada's Deepest Producer

Northend Petroleum Company's No. 1, deepest producing well in Canada, is reported to be flowing 500 barrels daily from the lower porous zone in the extreme northeastern flank area of Turner Valley. Depth is 9612 feet, with 683 feet of the lime penetrated. The well, considered to be located off structure was therefore drilled intermittantly over a period of several months. Imperial Oil Company recently acquired an interest in the well and collaborated in its completion. After acidizing it was brought in at an initial producing rate of 750 barrels, later settling down to 500 barrels. Further acid treatment is being planned, and an attempt will be made to establish production from the upper porous zone as well, where a good saturation was encountered.

North Turner Valley Well Holds Canadian Record

The all-time record for production by a single oil well in Canada is held by Home Oil Company's Millarville 2, in the North Turner Valley field. Since its completion in 1939 to the end of 1943, this well had produced 1,155,399 barrels of oil, according to official records.

American Exploration Bid Turned Down by Turkey

The government of Turkey has rejected a request by a combine of American companies for a petroleum exploration concession in the Adana region, according to a report from Ankara. The American combine, seeking a 99-year concession, had offered to install all oil field, pipeline and terminal facilities for a 50 percent interest in oil produced. The Adana territory lies near the border of Syria and comprises a sedimentary basin some 60 miles in width and more than 200 miles long, from the Mediterranean inland.

Philippine Explorations Well Advanced by 1941

The program of development of the petroleum resources of the Philippine Islands was in an advanced stage and drilling operations were well under way at the time of the invasion of the islands by the Japanese, according to information given by Dr. H. Foster Bain, director of the National Development Company, sponsored by the Philippine government. Dr. Bain was interned in Manila by the Japanese, and returned to the United States in January.

Bain said that a special petroleum geological survey of the islands was inaugurated in 1939, with Grant Corley in charge of a large staff of American geologists which carried on an intensive program of geologic mapping and stratigraphic studies that was practically completed late in 1941.

By that time, Bain reveals, the development company was drilling a test on a promising structure on the island of Cebu, and had made 2000 feet of hole before the Japs struck. The rig was demolished and the hole destroyed. In the meantime, four more locations had been staked on other islands in the group.

The Far Eastern Oil Development Company was also drilling a well on the island of Cebu late in 1941, after having completed one hole that was abandoned. The second well encountered showings at 8300 feet, and pipe was being set for a production test as the invasion began. This operation was also demolished.

USSR Plans Intensive Survey for Petroleum

An official announcement by the Soviet government outlines plans for putting 150 geological parties into the field for a re-exploration of all possible oil-producing localities in the country. Sixty areas will be studied in detail, where surface or other indications point to the possibility of commercial oil accumulations being present. Particular attention will be centered in the provinces of Uzbekistan, Saratov and Stalingrad, and in the Tatar Republic.

Expansion of Facilities In Mexico Is Reported

Facilities for the transportation and storage of petroleum and petroleum products in Mexico have been greatly expanded during the past five years, the United States Department of Commerce reports. Pipe-line capacity had at the end of 1943 been boosted from 75,000 to 210,000 barrels daily; the number of tank cars on rail lines had risen from 439 to 1410; tank trucks from 485 to 530; and storage tank rated capacities had been increased from 1,397,169 to 1,725,786 barrels.

New Signs of Oil Seen In State of Bahia, Brazil

New indications of petroleum have been noted in the State of Bahia, Brazil, in Reconcave, the bay surrounding the state capital, and prospects of developing commercial production are good, in the opinion of geologists and technicians. Encouragement of exploration is to be expected, as Brazilians recognize the economic advantages that oil fields would afford.

Oil shale deposits in Bahia also are receiving continued attention. They lie along the southern coast of the state.

Penitas Field Extension Into Mexico Attempted

Petroleos Mexicanos, nationalized Mexican petroleum industry, has announced a location for a projected 8000-foot wildcat well to be drilled south of the Rio Grande and less than a mile from production in the Penitas gas-distillate field, Hidalgo County, Texas.

Alberta Grants Extensions

Due to wartime difficulties in obtaining machinery, materials and drilling crews, the government of Alberta has granted an extension of one year for commencement of drilling operations on all leaseholds involving provincial lands. The previous regulation required that wells be started within one year of the granting of leases.

U. S. Field Operations

Illinois Basin

Two Discovery Wells in Indiana for the Week

Probably the most interesting test in Illinois last week is The Texas Company's Draper 1, N½NW SW 8-3s-6e, in the Mayberry pool of Wayne County. The well is slated to explore the Devonian lime, which has had virtually no substantial tests in the Wayne County and Eastern Illinois basin area. The well is drilling toward the lime below 4668 feet. A slight show of oil was encountered in the Warsaw formation.

Wayne County: Robinson and Puckett's Cox 1, NW SW SW 7-3s-8e, a southeast offset to the discovery well which extended the Mill Shoals pool north, gave promise of producing 300 to 600 barrels daily from Aux Vases sand. Thirty feet of saturation was encountered at 3240-70 feet.

Washington County: H. H. Hubbard's Kitowsky 1, SW NW NW 22-3s-2w, is waiting on cement after running a squeeze job to shut off water which encroached during a test of Benoist sand at 1298 feet. Approximately a foot of saturation was recovered but when plug was drilled the wildcat showed mostly water.

Madison County: Sinclair-Wyoming Oil Company's Hess 1, NE SW 10-4n-6w, continued to flow 375 barrels of oil and 1 barrel of water daily from Devonian lime at approximately 1700 feet. Operators have set casing to Hess 2, at 1731 feet.

White County: Big Chief Drilling Company's Martin 1, E½ NE NW 34-3s-8e, a wildcat, recovered three feet of a core at 3325-36 feet in the McClosky lime, which may prove commercial. However, the drill was carried ahead without a drill-stem test of possible pay zone.

Indiana

Indiana had two discovery wells to its credit last week, one in Posey County, the other in Knox County.

In Posey County, three fourths of a mile north of the Upton pool, Bennett Brothers' Irence Schultz 1, SE SW SE 29-6s-14w, was showing for an Aux Vases producer from pay at 2776-2800 feet. On a drill-stem test the well made 300 feet of gas and 120 feet of oil-cut mud in 75 minutes. Casing was set to 2775 feet and was waiting on cement.

W. P. Muller's McDowell 1, C E½ NW SE 36-2n-11w, in Knox County, 1½ miles southeast of the St. Thomas pool, was hailed as a discovery in McClosky lime. Saturation was cored at 1857-67 feet, (latter figure total depth) and on a one-hour drill-stem test at 1846-67 feet, the well made gas in 23 minutes and filled with 300 feet of oil in 37 minutes.

Kentucky

A new Cypress sand discovery was in prospect for Webster County this week at H. L. Cokes' Curry 1, 3-L-21, one mile southeast of the Clay pool.

Drilled with cable tools, recovered saturation in the sand at 2334-63 feet and casing was set for a test of the pay. Excellent oil show was had while drilling with 2400 feet of water in the hole. The Clay pool produces from the Pennsylvania sand.

Union County: High water from the Wabash and Ohio rivers and poor weather conditions have been restricting operations in the Illinois, Kentucky and Indiana oil areas, and as a result The Texas Company and Ashland Refining Company's Culver 1, 12-P-20, 2½ miles northeast of production in the Uniontown pool, is still waiting to drill plug for a test of good McClosky lime saturation. The well promises to give the Uniontown pool an extension or open a new area.

Oklahoma

New Cromwell Sand Well For Hughes County

A new Cromwell sand discovery for Hughes County and the staking of six locations in the West Edmond field of Oklahoma and Canadian counties highlighted Oklahoma oil activities the past week. Interest in the West Edmond pool, most important 1943 discovery, has been intensified as companies are stepping out more boldly, apparently under the impression that this will become a major oil reserve covering a wide area on the east rim of the Anadarko Basin.

Deep Rock Oil Company's Myers 1, SE SE NE 7-7n-10e, Hughes County, four miles southeast of the small Horns Corner field, flowed 40 barrels per hour from Cromwell sand at 3590 feet. This is the company's second oil discovery in the immediate area.

McClain County: Carter Oil Company's two deep Wilcox tests, the deepest holes drilling in Oklahoma, so far are disappointing. Johnson Ranch 1, C SW NE 13-8n-4w, is still shut down at 10,536 feet awaiting outcome of the Cottingham 1, C SE SW 4-7n-3w, located 3½ miles northwest, and which last was reported coring at 11,155 feet in sand.

Logan County: Eason Oil Company et al's Koetsch 2, SW SE SW 23-15n-3w, first well to tap Wilcox production in this area, was preparing for final test. Producing zone at 6270-89 feet flowed 60 barrels of oil through tubing, then went dead. Total depth is 6289 feet.

Payne County: Three miles northwest of the East Ingalls field Stanolind Oil & Gas Company and Amerada Petroleum Corporation's School Land 1, NE SE SE 16-19n-4e, loomed as a pool opener after a drill-stem test at 3590-3627 feet showed 270 feet of oil and some gas, second test at 4032-41 feet in the second Wilcox showed about 2,000,000 feet of gas in three minutes and when the tool was pulled it had 150 feet of oil and 40 feet of water and mud. Casing has been run to the bottom at 4041 feet.

Okfuskee County: Big Chief Drilling Company et al's Kirby 1, SW NE NE 20-10n-9e, presaged another gas well for the North Bearden area with the test showing for 2,000,000 feet of gas in Hunton lime at 3755-90 feet. It is drilling ahead at 3963 feet in the Viola zone. The well is a southwest offset to Price 1, field discovery.

Kansas

Seismograph Prospect Near State Line Drills Ahead

While reporting scattered staining in the Wabaunsee sand of the Pennsylvanian section, drill-stem test at Sinclair Prairie Oil & Gas Company's Glad & Brock 1, SE NW SE 19-13s-42w, 75 miles from the nearest oil production, recovered 280 feet of mud with no oil or gas shows at 3937-69 feet and is drilling below 4645 feet. The well is ½ mile east of the Colorado state line and is in the Denver Basin. Nearest production is in Scott County. The well had a strong gas show at 2000 feet which blew rock over the 96-foot derrick. The test is a seismograph prospect and the block which lies in Kansas and Colorado covers about 100,000 acres on the Arapaho structure.

Grady County: Skelly Oil Company's Goodwin 1, C SE NW 8-5-8w, two miles east of the Cement pool and in a highly faulted area, ran electrical survey at 8019 feet but results were not revealed.

Hodgeman County: Continental Oil Company's Koontz 1, SWc 30-23-21w, wildcat east of Edwards County production, failed to show in the Viola and Arbuckle and was abandoned at 5097 feet. Tops logged were Lansing, 4014 feet; Mississippi, 4618 feet; Viola, 4785 feet, and Arbuckle, 5050 feet.

Pratt County: In the prolific Chitwood pool, Lion Oil Refining Company completed another good well as Maudsby 1, NE NW SE 22-28-12w flowed 38 barrels of oil per hour from Simpson lime at 4394-4414 feet, total depth 4474 feet.

Russell County: Nate Appleman and Nadel & Gussman added a new pool to the county with completion of Krug 1, C SE NW 3-15-14w, which swabbed 40 barrels per hour from Lansing lime at 2960-82 feet. Tankage is being erected.

West Texas

Church & Fields Sector Reports Good Producer

Two extensions for the Wheeler-Ellenburger one-well pool, Eastern Winkler County, are due for early completion, although both are structually low. Stanolind Oil & Gas Company and Shell Oil Company's Wheeler 1-A, ½-mile west of their discovery, entered Ellenburger at 10,642 feet, or 162 feet low, and flowed oil when tester was used at 10,640-10,661 feet, with 3450 pounds closed-in pressure. This outpost will be deepened before landing pipe. The partnership's Blue 2, ½-mile south of the discovery, entered Simpson at 9540 feet, 46 feet low, and was drilling at 9975 feet. Mid-Continent Petroleum Corporation's Wheeler 1, 5/8-mile northeast of the discovery, cemented 5½-inch on bottom at 10,743 feet after logging 158 feet of Ellenburger section and pay, which is 48 feet low.

Keystone-Ellenburger: Sinclair Prairie

Oil Company's Walton 4-A, ¾-mile west by north offset, logged about 140 feet of oil pay below the Ellenburger gas cap in drilling to 9682 feet, and was drilling out cement at 9622 feet to perforate. Phillips Petroleum Company has contracted for east and south offsets. Amon G. Carter and Pure Oil Company's Walton 3-C, north offset to their discovery, was drilling hard dolomite at 9626 feet in Ellenburger, topped at 9314 feet, or 88 feet low, with top of oil pay at 9520 feet.

Stanolind Oil & Gas Company's Sealy-Smith 1, pending discovery near the south line of Winkler County, was drilling out cement from pipe landed at 6298 feet, or 7 feet off bottom, to perforate. This wildcat entered the Tubb zone (Clear Fork) at 5780 feet and oil pay at 6120 feet with elevation of 2778 feet. Rig will be moved one mile east for second test on its 31,600-acre lease.

Crane County: Bert F. Weekly et al's University-Tidal 1, NE SW NW Section 27, Block 30, scored an unusually large well for the north end of the old Church & Fields sector of the McElroy area, in flowing 909 barrels initial after 620-quart nitro shot in broken pay at 3024-3180 feet. John I. Moore's Barnsley 1, 2⅜ miles east of the south portion of Sand Hills field, pumped 189 barrels of 34.5-gravity oil, plus 2 percent clear water, on official gauge after using 6000 gallons of acid in broken Clear Fork at 4500-4651 feet. This outpost, or discovery, is not expected to average more than one third of its rated output on sustained production. Magnolia Petroleum Company's Lea 10, south offset to a recent prolific McKnight pay discovery in the northeast portion of Sand Hills field, plugged back from 4605 feet to 3210 feet preparatory to perforating at 3070 feet.

Pecos County: Standard Oil Company of Texas' Mac-Der Company 1, C NE SW T&StLRy. 36, Block 144, 6½ miles south of Owego pool, was drilling igneous rock at 5306 feet with a thin overlying section of granite wash and chert. This wildcat showed gas with oil spray from Basal Permian at 4706-37 feet, thus causing the start of a number of nearby tests on short-term leases. This wildcat will be plugged to try for completion in the 4700-foot zone. The company's Mac-Der 1, lease 3, situated 3½ miles east by south, was drilling at 760 feet. Shell Oil Company's Cordova-Atlantic 1, east offset to the Owego pool's Ellenburger discovery, showed considerable gas at 1580-90 feet, and was drilling below 1700 feet. Magnolia Petroleum Company et al's Lemar 1-A, south offset to producer, was drilling at 1045 feet. Holing the district depth record by a wide margin, Phillips Petroleum Company's Price 1 was drilling limey-shale at 14,260 feet with the Ellenburger as its objective.

Andrews County: The Texas Company's Pattillos 1, prospective oil strike from Basal Grayburg in the Shafter Lake area, logged additional oil pay in deepening from 4342 to 4414 feet, then cemented 7-inch at 4195 feet to try for completion. A small pumper was indicated from Grayburg saturation, topped at 4276 feet. The company extended the Mabee field one mile southwest with a pumper, which is listed under current completions, and a ¾-mile east extension to the latter was assured when Mabee 7 recovered 5 feet of oil-saturation in core at 4651-86 feet.

North Texas

Jack County Records New Mississippian Lime Well

A prolific oil discovery from the Mississippian lime was recorded by Jack County when Shell Oil Company's O. J. Lester 1-A, McKinney & Williams Survey, 5 miles northwest of Jacksboro, flowed 246 barrels of oil on 2¼-hour open-tubing test, with gas volume rated 2,589,000 feet daily. This wildcat entered Mississippian at 5444 feet, being 475 feet high to a 6084-foot Ellenburger failure 2 1/3 miles northeast, and logged saturation from 5458 to 5512 feet, total depth. Pipe-line connection will be provided by Sinclair Refining Company.

Shell Oil Company's Wolfe 2, south offset to its Wolfe pool 4400-foot Bend discovery, Jack County, opened a deeper pay in testing 60 barrels of distillate and 4,500,000 feet of gas daily from conglomerate in Basal Bend at 4828-60 feet, total depth 4864 feet. Wolfe 2 entered Bend at 4382 feet, 23 feet high, and logged broken oil saturation at 4382-4432 feet, which has not been tested.

First Strawn production for the Ellis field, second largest Bend lime area in Jack County, was uncovered when Standard Oil Company of Texas and Hanlon-Buchanan's Moore 1, W. Berryman Survey, flowed 350 barrels of oil natural through casing in 16 hours from sand at 3629-37 feet, with pipe at 3625 feet. This strike is on the north edge of the field.

Clay County: Sinclair Prairie Oil Company's Spikes 1, 990 feet southeast of the Wynn pool's prolific Mississippian discovery, showed for a big well when tester was used at 6165-6250 feet, making gas in 3 minutes and began flowing oil within 11 minutes. The rated volume of gas attained a peak of 6,000,000 feet daily, unusually large for this zone. Spike 1 entered Bend at 5780 feet and Mississippi at 6165 feet, being 38 feet high and 18 feet low, respectively, on these markers, and will drill through the pay before landing pipe for completion. Shell Oil Company's Harris 1, west offset to its Wynn pool discovery, entered Bend at 5864 feet, 20 feet low, and was drilling shale at 6175 feet. Rogers Lacy and L. S. Flannery's Lyles 1, Block 21, San Augustine University Survey and on a strike between the Joy and Burns-Midway fields, but separated from both by decisive failures, indicated a 30- to 50-barrel pumper after acidizing through perforations in Bend conglomerate at 5860-70 feet. Owners have shot the casing with 40 quarts of nitro at 5860-70 feet to try for a flowing well. Consolidated Oil Company's Gilbreth 1, also situated along this trend, was drilling shale 4030 feet.

Grayson County: Sinclair Prairie Oil Company's Fischer 1, J. Shelton Survey, 2½ miles south of Whitesboro, entered Ellenburger at 5100 feet and logged oil saturation at 5127-35 feet. Another core will be pulled before attempting drill-stem test. This wildcat passed up numerous shows of heavy oil in Strawn series.

Cooke County: Phillips Petroleum Company's Dangelmayer-Dangle 1, situated on a 200-acre lease and offsetting its 3-well pool, registered high Ellenburger top at 2173 feet, and drill-stem test at 2186 feet netted flowing oil production in 16 minutes. It was drilling at 2208 feet to establish pay thickness before running pipe. Sinclair Prairie Oil Company's Cory 1, northwest offset to its Basal Strawn discovery, was fishing for drill pipe at 1462 feet while bottomed at 3957 feet.

East Texas

Wildcat Exploring Below Rodessa Show

Phillips Petroleum Company's McMinn 1, situated 6 miles south of Tyler and in the basin sector of Smith County, passed up a show of oil in the top of the Rodessa and was coring an unidentified formation at 9690 feet. This wildcat is exploring an unusually deep-seated structure, and developed considerable oil in rotary returns from Upper Glen Rose at 7972-8000 feet that was not tested since this is not a source of commercial production in the district.

Sun Oil Company's Patterson 1, west outpost for the Sand Flat area and 6 miles north of Tyler, logged nominal saturation in Rodessa, topped at 9252 feet, about 10 feet high to the pool's plugged-back Paluxy discovery, and was drilling at 9312 feet. First oil pay in Rodessa is due near this level.

Camp County: Gulf Oil Corporation's Boyce 1-A, west portion of the Pittsburg field, is the largest natural flowing well, having gauged 249 barrels initial through ¾-inch from Pittsburg sand perforation at 7957-89 feet and open hole at 8011-60 feet. The field has 9 oil wells and no failures. The area is dependent upon tank trucks for an outlet, although American Liberty Pipe Line Company is negotiating for contracts to relay the oil by pipe line to a trunk line system. Mid-Continent Petroleum Corporation's McGahee 1, 3 miles northwest of Pittsburg and structurally high for the area, entered Paluxy at 5706 feet, with water at 5746-52 feet, and was drilling at 5910 feet. Tide Water Associated-Sea Board's Roberts 1, wildcat, was coring 7726 feet in Rodessa.

Rusk County: Sinclair Prairie Oil Company's Markley 1, 6 miles west by south of Tatum, logged massive anhydrite at 5773-6032 feet, with elevation of 389 feet, and was coring anhydrite and lime at 6105 feet.

Wood County: Gulf Oil Corporation's Brewer 1, Winnsboro prospect, was showing a small amount of high-gravity oil with water and rotary returns after several stages of acid treatments through perforations at 8263-88 feet. Shell Oil Company's Whatley 1, southeast outpost at Manziel and the first deep producer for the county, failed to restore its flowing production after re-acidizing Rodessa perforations at 8455-8525 feet. Magnolia Petroleum Company's Lindley 1, Yantis area, was drilling hard sand at 8438 feet, having entered Pettit at 8313 feet.

Quitman Field: Rogers Lacy et al's Republic 1, F. S. Chaney Survey and a southwest outpost, registered low structural position in entering Georgetown at 5205 feet, and was drilling lime at 5600 feet.

Manziel Field: The Texas Company's Pittman 1, north offset to the field's most northerly producer, entered Georgetown at 5205 feet and Paluxy series at 6432 feet, being 42 feet and 54 feet low, respectively, and logged water in drilling Paluxy to 6453 feet. Ameranda-

Baash-Ross News

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OIL WEEKLY EDITION

THERE IS ONLY ONE BEST TIME TO SIMPLIFY A FISHING JOB, AND HERE'S HOW TO DO IT...

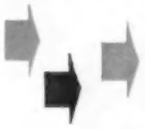
A TIP that can save you thousands of dollars in fishing costs—can even save your entire well from premature loss and abandonment—is this:

Every time you run your drill string back in the hole, while the bit is still above the table ask yourself, "Is THIS the time the drill string is going to stick? And if it does, have I taken every precaution possible to simplify its recovery?"

Because the one *best* time to simplify a fishing job is BEFORE you run the drill string in the hole. And the way to do it is to equip your string with a Baash-Ross Type "E" Autolock Safety Joint. Then, if trouble strikes, you can not only immediately recover the major portion of your drill string by simply unscrewing it at the Joint and removing it from the well, but you also have a re-connectable joint at the top of your fish for taking hold with various fishing tools.

BUT NOT JUST *ANY* SAFETY JOINT WILL DO.

The Baash-Ross Type "E", unlike conventional Safety Joints designed for use in straight fishing and other low-torque operations, is specifically engineered to withstand the heavy torsional strains and other difficulties encountered in modern high speed drilling. Check over these features...



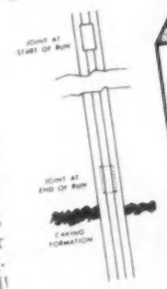
MULTIPLE DRIVING SHOULDERS In the Type "E" the severe torsional loads of high speed drilling are transmitted through a *series* of driving shoulders—not just one as in other types. Moreover, these *multiple* shoulders extending around the full circumference of the tool are so designed that they will mate in only the correct position, eliminating any possibility of over-tightening the Joint either when making it up, or while drilling. *Thus, the Joint is always ready for instant release at the will of the operator!*

REVERSE ROTATION In drilling, it is often necessary to reverse rotation of the string. In the Type "E" this reverse torque is transmitted through the spring-loaded collar and tapered shoulders, thus permitting normal reverse rotation without loosening the Joint. Whenever release is desired the reverse torque needed to break the Joint is not more than *half* that required to break a normally made up tool joint of equal diameter!

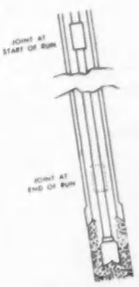
FULL PACK-OFF Another important drilling feature in the Type "E" is its ability to withstand continued high-pressure circulation without leaking. And the packing element is so designed that the Joint can be unscrewed for *six* full turns without losing fluid seal, permitting full circulation while releasing the string!

HOW TO USE THE TYPE "E"

To use it where formations have a tendency to cave or heave, place the Joint far enough above the danger point so that it will still be above the danger spot when the run is completed. Or for maximum recovery use *two* joints—one a short distance, the other a considerable distance above the danger spot. Then, whether the pipe sticks just after running in a new bit, or near completion of the run, maximum recovery is always assured!



Another important application is in drilling out operations. Here the Joint is located so that it will always be in the protected zone above the shoe. Then, should the pipe stick in the open hole below the shoe, loss is reduced to an absolute minimum.



And after you have recovered the major portion of your drill string, the bottom half of the Joint attached to the fish enables you to reconnect and release at will with fishing strings by simply using the other half of the Joint as bottom connection on your run-in strings!

THERE ARE MANY OTHER IMPORTANT FEATURES incorporated in the Type "E" that space does not permit describing here. It is available in all popular drill pipe sizes, both regular and full hole, and in all sizes is stronger than the drill pipe on which it is run. Get the full details from your nearby Baash-Ross representative — or write direct.

Gulf's Hudson Unit 1 provided a nominal northwest extension in swabbing 80 barrels of oil in 18 hours, with oil column filling 3200 feet in hole, and probably will require a pumping unit. Production is from perforations at 6328-40 feet in Paluxy series, topped at 6298 feet, 30 feet low. Muddy roads have delayed the starting of Amerada Petroleum Corporation's Sheppard 1, recently authorized southwest outpost for the Manziel field. This project will determine if Manziel and Quitman fields will be united.

Southwest Texas

New Pay is Found at Longhorn, Duval County

The Texas Company is completing potential test on Tijerina 2, discovery of a field 1½ miles southeast of Seeligson field, Jim Wells County. On one test the well flowed 26 barrels of 39-gravity pipe line oil hourly through ¼-inch choke with 1750 pounds pressure on tubing, casing sealed. Perforations were made at 7117-25 feet after drilling to 7128 feet and setting 7-inch casing on bottom. Around 18 feet of oil sand was topped at 7107 feet. It is not definitely known what connection there is between this discovery and Seeligson field, which has more than 15 pay sections. The company has staked location for Tijerina 3, 1320 feet west of the discovery, which is 9680 feet southeast of Tijerina 1, a producer on south edge of Seeligson field. All locations are on a 3000-acre lease, the discovery being in southwest corner of Andres Canales Survey 279.

San Patricio County: Humble Oil & Refining Company is making a squeeze job in Green Estate 1, wildcat discovery 2 miles southeast of Gregory. The well was shut down after it flowed 100 barrels of 45.7 gravity oil with some water from perforations at 9120-40 feet. Located in the southeast quarter of T. T. Williamson survey, the hole is bottomed at 10,010 feet with 5½-inch casing set to 9458 feet.

Stanolind Oil & Gas Company has purchased John T. O'Neil's gas-distillate discovery well and 2000-acre Welder Ranch lease in San Patricio County for $125,000 cash and $100,000 in oil payments and 1/16 overiding royalty. The acerage is in V. Tares and P. Villareal grants, the discovery being 1½ miles northeast of Stanolind's Thompson 3, deep well on the east side of Riverside field in Nueces County. The company is preparing to start development in the area immediately.

New Pay: Hiawatha Oil & Gas Company has opened a new pay ¾ mile northwest of production at Longhorn, Duval County, 466 feet out of the northeast corner of Section 22, Ball Ranch subdivision of Santos Flores grant. Miller 15 flowed 85 barrels daily through 5/32-inch choke from perforations in the 4500-foot level. The hole is bottomed at 4536 feet with 7-inch casing set to 4531 feet. A drill-stem test at 4495-4536 feet recovered considerable oil before setting casing. Rig has been skidded 1320 feet south for Miller 16.

Duval County: American Republics Corporation is making new test in Richardson 1, H&GN 18, wildcat 2½ miles west of Bridwell field. Perforations were made at 3935-50 feet, but the well showed a high gas-oil ratio and was shut in. A drill-stem test at 3934-44 feet recovered 120 feet of oil in 10 minutes before setting pipe. The hole is bottomed at 3159 feet with 5½-inch casing on bottom.

Texas Gulf Coast

Sun Gets Indicated Field Opener North of Winnie

Sun Oil Company is making production test in Daugherty Pool 1, indicated field opener 3½ miles north of Winnie townsite in Chambers County. Details concerning sand conditions have not been revealed, but the well is credited with sufficient Frio sand to make a producer. Hole was drilled to 9510 feet with 5½-inch casing set near bottom. Location is on a 40-acre unit composed of lots 15 and 16, Koch subdivision, F. Valmore league. It is believed the sand compares with that producing at Stowell in Jefferson County.

Sun Oil Company has set protecting casing to 8824 feet in Wingate 1, David Burrell Survey, wildcat 3½ miles southeast of Fannett townsite in Jefferson County, and is conditioning mud at 9433 feet.

San Jacinto County: Shell Oil Company is drilling near the 14,000-foot level in Central Coal & Coke 11, George Galbraith Survey, a wildcat on west flank of Mercy field. Operators have been withholding information, but well was drilled to determine deeper producing possibilities of the Wilcox. The field produces from top of this sand. Location is in James Robinson survey. Shell also is drilling a deep Wilcox test, Holderrith Unit 1, in Spring Creek area of Harris County. Depth is around 10,750 feet. Some coring was done in the 10,650-foot sections but details have not been announced.

Stanolind Oil & Gas Company's Roberts 1, 3 miles southwest of Shepherd, is shut down at 8519 feet after failing to find any shows on drill-stem test at 8025-72 feet. The test for 50 minutes showed recovery of 455 feet mud and 900 feet salt water.

Wildcatting: Humble Oil & Refining Company has spotted another 12,000-foot test on its 7000-acre lease in Rattlesnake Mound area of Brazoria County. It is Houston Farms Development 4, 1634 feet northwest of Houston Farms 1, Perry & Austin survey. The well is the company's fourth attempt to establish production in the area. First well was abandoned at 7332 feet in 1941, second in 1942 at 7501 feet and the third hole quit at 11,700 feet in December, 1943.

AIMME Regional Meet Set for Houston in May

The Petroleum Division of the American Institute of Mining and Metallurgical Engineers will hold its spring meeting at the Rice Hotel, Houston, May 8, 9 and 10. In addition to the meeting of the Petroleum Division, a regional meeting of the institute will be held at the same time.

A tentative program has been prepared but it is not too late to add additional papers. The program committee for the division consists of B. C. Craft of the Louisiana State University, Baton Rouge, chairman, and Jan Law, Douglas Ragland, Warren Jackson, Dr. C. R. Hocott, R. L. Huntington and Herman Kaveler.

South Louisiana

Gas Distillate Area May Register Oil Producer

Continental Oil Company and Union Sulphur Company are making first test in Shoesmith 1, Section 1-8s-4w, wildcat in China area of Jeff Davis Parish. The well is being watched closely as the first oil producer in an area that produces gas-distillate. It is three quarters of a mile northeast of Union Sulphur Company's distillate discovery. Shoesmith 1 topped an oil sand at 9495 feet, and hole was drilled to 10,093 feet in hard shale. A plug was set at 9500-9650 feet, drilled out to 9563 feet where 5-inch liner was set. The 7-inch casing is set at 9065 feet. Sands were logged at 8755-64, 9175-9200 and 9494-9534 feet.

Vermilion Parish: Phillips Petroleum Company has established a shallow oil sand at Erath, a field that previously produced only gas and distillate. Adelaide 1, NW NE 28-13s-4e, was perforated at 7380-83 feet and flowed 46 barrels of 30-gravity oil in 4 hours through ⅛-inch choke, tubing pressure 800 pounds. Hole was drilled to 7500 feet. All other wells in the field produce from the 10,000-foot horizon.

Beauregard Parish: Union Oil Company is making another production test in Edgewood 1, Section 25-6s-10w, wildcat discovery of the Gordon area. Perforations were made first at 6780-82 feet where the flow was at rate of 40 barrels of condensate daily on a drill-stem test. A second set of holes at 6767-70 feet failed to flow, and swabbing was started. Hole is bottomed at 6900 feet with casing set to 6818 feet.

Terrebonne Parish: Superior Oil Company of California is completing a wildcat in Bayou Penchant area as gas-condensate discovery. Located in section 30-18s-4e, the well was perforated at 9929-35 feet and on last gauge flowed at rate of 3,570,000 feet of gas daily with 18 barrels condensate through 12/64-inch choke, tubing pressure 3600 pounds. Depth is 11,828 feet with casing set to 11,277 feet.

Wildcatting: Tide Water Associated Oil Company is preparing to drill a 12,000-foot wildcat at Shark Island, Iberia Parish. Contract has been awarded Rowan Drilling Company for Miami Corp. 1, Section 9-15s-6e.

The Texas Company is preparing to drill White-Friant 1, Section 20-10s-4e, Sorrento area, Ascension Parish, projected to 10,500 feet. Sugarfield Oil Company has staked its third test in Rosedale area of Iberville Parish, Trinity 1, Section 108-7s-10e, projected to 11,000 feet, with Gilger Drilling Company as contractor.

St. Mary Parish: First completion in several months is being attempted on south flank of Charenton dome, where Fifteen Oil Company has been making squeeze jobs in South Coast 5, Section 24-13s-10e. Production test is being run in sand topped at 6820 feet which carried good oil show.

St. Martin Parish: Amerada Petroleum Corporation has been making flow tests on Kidder Unit 1, Section 44-7s-5e, second well at Arnaudville. The 10,160-foot level was first to be tested after squeeze jobs at 10,154-57 feet and 10,180-83 feet to shut off water. Depth is 10,643 feet with 5½-inch casing set to 10,243 feet.

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When a STURDYBILT house is moved from one site to another, there need be little, if any, loss of material. Sections can be dismantled as easily as they are erected, and they will fit into place perfectly, when later used on another site.

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Dollar for dollar, you can't top STURDYBILT prefabricated, demountable houses for value. Mass production economies, plus the use of highest quality material, assure you of buildings that will fit your budget as well as meet your needs.

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North Louisiana

Fields Active Following Stretch of Bad Weather

Drilling activities in North Louisiana, practically halted by bad weather have been resumed and 8 new locations, including a north Cotton Valley wildcat and 7 shallow wells in the Bellevue field, have been announced.

Claiborne Parish: Frank and George Frankel's Muslow 1, C NE NW 30-21n-7w, which was completed as a new-pay discovery last year in the old Homer field, has been shut in to be reworked after a drop in production from 1727 barrels in October to 157 barrels in January. The well will be reperforated from 4232-40 and 4212-22 feet. It is reported that several companies are interested in another test in the area.

Webster Parish: Ohio Oil Company has made a new location, north of the company's Gleason discovery in the Bodcaw, after starting a second test south toward Cotton Valley production. The new wildcat is Hodges 1, C NW SW 25-22n-10w.

Bossier Parish: An active drilling campaign in the shallow Bellevue field is underway with B. H. Gray having 3 wells drilling and 9 locations on the Arkansas Fuel Oil Company lease, NE NE 15-19n-11w. Similar action is expected from operators of adjoining leases. Wells produce from around 400 feet with no spacing limits.

Tensas Parish: Union Producing Company is completing Penrod-Jordan 4, SE NE SW 20-11n-10e, with perforations at 8355-88 feet, as the fifth producer in the field. The company's Penrod-Jordan 5, SW NW 20-11n-10e, was drilling at 7203 feet; Penrod-Jordan 3, SW SE 18-11n-10e, which failed in the Tuscaloosa, was drilling at 9565 feet.

Placid Oil Company's Ayer 1, 18-14-11e, resumed drilling at 9118 feet. David M. Lide's Fee 1, 22-12n-12e, deepest operation in the area, was below 9775 feet.

Arkansas

Offset to Discovery Well For Columbia County

An outpost test is getting under way in one Arkansas discovery area, while the other discovery of the year remains inactive pending federal and state regulations.

Columbia County: Location has been made by Southward Oil Company for Pearce 1, C NW NE 10-18n-20w, offset to Tide Water Associated Oil Company-Seaboard Oil Company's Pearce 1, discovery well which tested 85 barrels of oil daily, 3 miles west of the Atlanta extension area.

Chicot County: Placid Oil Company abandoned Coleman 1, wildcat in 22-18-3, at 4802 feet, and was near that depth at Roy Mathis 1, 21-18-2.

Union County: No additional activity has been reported in the Wilkes field where Atantic Refining Company's Mahoney & Murphy 1, NE SE 2-18s-18w, 2 miles west of Shuler, flowed 75 barrels per day with high gas-oil ratio. No regulations have been announced for the discovery area.

Rocky Mountain Area

New Oil Pay Imminent At Steamboat Butte

Location for a 8000-foot test of Bell Rock structure in Moffat County, on the western slope of Colorado, to test to and including the Sundance has been spotted in NW NE SE 4-6n-92w. The contracting firm of Noble Brothers is moving in rotary tools for account of Stanolind Oil & Gas Company, Continental Oil Company and The Ohio Oil Company for Hanawalt 2, 100 feet west of Hanawalt 1 drilled in 1930 by Midwest Refining Company. The latter developed an open flow of 35,000,000 feet of gas in the Mesaverde at 2830 feet. Objective was the Morapos sandstone but the hole was abandoned because of mechanical difficulties before that depth was reached.

Bell Rock is a small dome formed in beds of Mesaverde sandstone and Lewis shale at the northern end of the Williams Fork anticline. It has approximately 400 feet of closure and the north side of the structure is highly faulted. Bell Rock is about 10 miles west of Craig. The block as now constituted embraces 7280 acres.

Winkleman Dome: Stanolind Oil & Gas Company's Shoshone-Arapahoe, SW SE SW 18-2n-1w, was completed as a flowing well for an initial of 20 barrels of 26-gravity oil an hour through chokes, producing from the Tensleep at 2900 feet. Seven-inch production string was cemented at 2893 feet, top of the Tensleep was logged at 2878 feet and the well was drilled to 3517 feet. Winkleman Dome is on the bench south of Wind River, south of the Pilot Butte field and on the same general line of folding with Pilot Butte, Steamboat Butte, Hudson, Dallas and Derby fields. The new field is a faulted anticlinal dome on the Shoshone anticline and has about 125 feet of independent closure. Surface formation is Mowry shale.

Sage Creek Petroleum Company drilled two wells in the field in 1917, both located in SW 18-2n-1w, developing gas in the Morrison at 943 feet, but as there was no market for the gas at that time both wells were abandoned.

Steamboat Butte: British-American Oil Producing Company's Tribal 2-C, NE NE SE 31-4n-1w, logged top of the Tensleep at 6771 feet and after coring to 7034 feet is running casing to complete. The cores recovered were highly saturated but a drill-stem test was not successful. Sufficient oil was recovered, however, to determine that it has an API gravity of 29.7 degrees.

Steamboat Butte was a major discovery in 1943 in the Sundance and three wells have been completed in this horizon. The Pilot Butte field, just south of Steamboat, produces from the Tensleep.

Little Buffalo Basin: Stanolind Oil & Gas Company has abandoned Unit 1, SW SW NE 34-38n-100w, deep test on the west dome of Little Buffalo Basin, at 5776 feet, 200 feet below the top of the Madison lime. The Madison carried water and no oil and it found the Tensleep water-bearing at 5042-5326 feet. The well was located near the top of the structure and 3½ miles northwest of the Goodstein discovery well in the Tensleep on the east dome.

The sugar-coating can be too thick!

Congress now proposes to deduct federal taxes from the salaries and wages of millions in the lower income brackets—with no individual returns required. Hidden and sugar-coated levies are always dangerous. Only when taxes hurt and confuse and inconvenience do men examine government expenditures and concern themselves with government waste. With bureaucrats dancing gleefully over the death of public economy we can't afford to have fifty million of our most gullible voting citizens forget who pays the fiddler. Careful, congress! You may be playing into the hands of the administration.

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UNION CARBIDE REPORTS

first full-year's production of

BUTADIENE

for the Government's Synthetic Rubber Program

(*INSTITUTE, W. VA. PLANT*)

Night view of the immense butadiene plant at Institute, W. Va.

A LITTLE OVER A YEAR AGO* the first tank car of butadiene was shipped from the Government's large integrated rubber project at Institute, W. Va. This historic shipment came from the immense butadiene plant which was designed and built by CARBIDE AND CARBON CHEMICALS CORPORATION for the Government's Defense Plant Corporation—and is being operated by this Unit of UCC, for the Rubber Reserve Company.

FIRST YEAR'S PRODUCTION OVER THE RATED CAPACITY—that is the record of this huge 80,000-ton-per-year plant during its first twelve months! This has been accomplished in spite of the many inherent problems that had to be solved in starting a wholly new project of this magnitude.

Over 8/10 of a short ton of butadiene is required to make about one long ton of Buna S type synthetic rubber. Butadiene from this plant during the past year has provided more than 90,000 long tons of synthetic rubber for the Nation's requirements, both military and essential civilian. The delivery of this all-important ingredient also has made possible early production of synthetic rubber under the Government's program.

NOW HUGE BUTADIENE PRODUCER—although originally designed to produce 80,000 tons annual capacity, the Institute plant is now delivering butadiene at a rate of more than 100,000 tons per year. An identical plant using Carbide's process was put into operation by the Koppers United Company in September, 1943, at Kobuta, near Pittsburgh, Pa.

OVER 75% OF THE TOTAL PRODUCTION OF BUTADIENE for the Government's synthetic rubber program in 1943 came from the alcohol process developed by CARBIDE AND CARBON CHEMICALS CORPORATION.

In addition to the plant at Institute, Carbide made available plans for the large plant at Kobuta, which was built and is being operated for the Government by Koppers United Company.

CARBIDE AND CARBON CHEMICALS CORPORATION also has designed and built for the Defense Plant Corporation, and is operating for the Rubber Reserve Company, another large butadiene plant at Louisville, Ky.

▼

Business men, technicians, teachers, and others are invited to send for the book TX-5 "Butadiene and Styrene for Buna S Synthetic Rubber from Grain Alcohol," which explains what these plants do, and what their place is in the Government's rubber program.

*The first tank carload of butadiene from Institute was shipped on February 18, 1943—less than one month after Unit No. 1 of the four large butadiene-producing units had started operating. Subsequently, Unit No. 2 started producing in March, Unit No. 3 in April, and Unit No. 4 on May 25, 1943.

BUY WAR BONDS AND STAMPS

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Electro Metallurgical Company
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ELECTRODES, CARBONS AND BATTERIES
National Carbon Company, Inc.

INDUSTRIAL GASES AND CARBIDE
The Linde Air Products Company
The Oxweld Railroad Service Company
The Prest-O-Lite Company, Inc.

PLASTICS
Bakelite Corporation
Plastics Division of Carbide and Carbon Chemicals Corporation

The material herein has been reviewed and passed by the Office of Rubber Director, the Rubber Reserve Company, the Defense Plant Corporation, and the War Department.

Michigan

Dundee Lime Discovery Indicates Small Area

Averaging 40 to 50 barrels of oil and 10 to 20 barrels of water by flow and pump Stewart and Whites' Jorgensen 1, C NE NE 14-12n-6w, Montcalm County, has gained discovery rating as a Dundee-lime well but only a small producing area, 300 acres or less, is indicated. The well produced up to 90 barrels a day natural from Dundee lime at 3474-77 feet natural but after a week started to cut water and now the well requires pump agitation.

Kalamazoo County: Fisher-McCall's Bishop 1, NW NW NW 5-2s-12w, Oshtemo Township, carried free oil in the Traverse and may rate interest as the first oil well in Kalamazoo County. Pay was logged at 1300 feet in the top of lime and some water from an undetermined source was reported. The wildcat is on trend about 10 miles southeast of the Bloomingdale field.

Allegan County: James T. McGerry's Haveman 1, SE NW NE 30-2n-11w, Martin Township, 7 miles southeast of the Hopkins pool, is testing a Traverse lime oil pay at 1636-39 feet.

☆

WILLARD GILL, former geologist with Pure Oil Company at Fort Worth, has joined Hunt Oil Company to take charge of the company's geological activities in the Southeastern States with headquarters at Jackson, Mississippi.

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Oil is the life blood of modern warfare! *Your* job is to keep it coming—fast—without costly delay. So crack down on bottom water sabotage—keep a supply of Eagle Lead Wool handy. This finely stranded, metallic wool is tamped into the water-seeping crevices about the hole, makes a permanent, durable, non-corroding seal. Economical Eagle Lead Wool is rapidly installed in cartridge-shaped Eagle Wire Containers, sized to fit all casings. Be prepared when bottom water comes—order through your jobber *today!*

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California

New Sands in Middle Of Old Field Reported

Persistently reported but still lacking official announcement, a discovery of two new sands between Midway and Buena Vista awaits confirmation by a production test of Standard Oil Company's 54, SW SW SE 27-31-23. Opening of new pays in this area, practically in the middle of California's greatest field, obviously would have significant possibilities.

The two sands aggregating more than 80 feet, according to unofficial reports, were found between 4250 and 4450 feet, and cores were reported as heavily saturated with 30-31-gravity oil.

Surrounding territory has produced prolifically for years, almost entirely from sands of Pliocene-Pleistocene age, usually found at relatively shallow depths. It is believed the reported new zones are Upper Miocene, probably the equivalent of a formation locally designated as Reef Ridge.

Kern County: The Texas Company is making preparations for a deep test on the J. B. Martin property in North Belridge.

Richfield Oil Corporation is starting a new Tejon Ranch wildcat, B-23-6, NE SW NW 6-11-18, at a point six miles north of nearest production.

Westerly reaches of Paloma field, in territory outside of the unit plan, will be tested by an Ohio Oil Company wildcat in 32-31-26.

An area southeast of Rio Bravo field will be explored by a Richfield Oil Corporation at KCL Goose Slough 1, NW NW NE 20-29-25.

Los Angeles County: Several sectors tributary to Dominguez field presently are attracting much attention, with three wildcats drilling. O. F. Darling is drilling off the northwest flank, Continental Exploration Company to the south of the field, and Selbar Oil Company still further south.

Showings sufficient to justify a production test were cored in Pauley Bros.' El Segundo area wildcat, Loftus 1, 11-3-15. Success with the test would open a new pool or a far extension of El Segundo field.

Alabama

Second Well Completed, Two Outposts Located

Rapid development of the first commercial oil production in Alabama is underway at Hunt Oil Company's discovery in Choctaw County where a second well has been completed and locations made for two outposts.

The second completion was the company's Jackson 2, SE NE 2-10n-4w, near Gilberton, ¼-mile east of Jackson 1, discovery in SW NE 2-10n-4w, which is producing 60 barrels of 20-gravity oil per day from 2800 feet in Selma chalk. Production of the second well is reported similar to that of the initial producer.

Locations have been made ¼-mile north and ¼-mile west of the discovery well.

United States Well Completions

ALABAMA

Choctaw County—New Field: Hunt Oil Co.'s Jackson 2, se ne 2-10n-4w, flow 60 bbls 20-gr, Selma chalk, td 2800 ft.

ARKANSAS

Columbia County — Dorcheat - Macedonia: Phillips' Nipper 1, 18-18-21, dual comp in Cotton Valley, perf 7046-51 ft, flow 12 bbls 4 hrs; perf 7560-68 ft, 28 bbls, td 9046 ft.

Columbia County—Magnolia: H. A. Wright & S. A. Mix's Baker Est. 1, c sw ne 13-17-20, abnd 7010 ft.

ARKANSAS WILDCATS

Chicot County—Failure: Placid Oil Co.'s Coleman 1, 22-18-3, abnd 4802 ft.

Columbia County — Failure: Frankel and Frankel's Ulma Edwards 1, c se sw 16-17-21, abnd 8168 ft.

Union County—Failure: John C. Schmidt's Mary Pyron 1, 660 s 480 w of ne cor se se 21-17-14, abnd 3050 ft.

CALIFORNIA

Fresno County—Coalinga: Standard's 68 3C, sw nw se 3-20-15, pump 181 bbls 20.7-gr, 170 ft perf 3400 ft, td 3405 ft, pb 3360 ft.

Fresno County—Raisin City, East: Universal Consolidated Oil Co.'s Taylor 2, ne ne se 14-15-17, flow 490 bbls 26.1-gr, 11/64-in, 450/550 lbs, perf 5020-24, 5032-42, 5084-94 ft, td 5225 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 22-34, se nw nw 34-28-21, pump 30 bbls 15-gr oil, 7 wtr, 671 ft perf 1210 ft, td 1210 ft.

Belridge Oil Co.'s 32A-34, sw ne nw 34-28-21, pump 30 bbls 15.8-gr oil, 22 wtr, 676 ft perf 1180 ft, td 1180 ft.

Chanslor Canfield Midway Oil Co.'s B. F. 11-8, sw sw nw 11-29-21, pump 44 bbls 14-gr oil, 7 wtr, perf 1015-25, 1062-67, 1165-78 ft, td 1350 ft.

General Petroleum's 10-1, ne sw sw 1-29-21, pump 12 bbls 15.1-gr oil, 7 wtr, perf 842-881, 916-962, 984-1015 ft, 1st oil sand 842 ft, td 1027 ft.

Shell's FKL 14, nw sw se 1-29-21, pump 46 bbls 13.7-gr oil, 39 sand, perf 1147-30, 1100-953 ft, td 1150 ft.

Kern County—Buena Vista: Honolulu's 6, sw sw sw 2-32-24, pump 18 bbls, 75 ft perf 2995 ft, 2nd oil sand 2965 ft, td 2997 ft.

Kern County—Kern Front: Carrec Oil Co.'s 12, sw sw se 11-28-27, pump 75 bbls 14-gr oil, 4 wtr, 161 ft perf 2002 ft, td 2002 ft.

Richfield's 2, ne nw ne 22-28-27, pump 72 bbls 14-gr oil, 40 wtr, 327 ft perf 2398 ft, oil sand 2068 ft, td 2400 ft.

Standard's 3-3, sw ne ne 21-28-27, pump 29 bbls oil, 4 wtr, 40 ft perf 2910 ft, td 2913 ft.

Standard's 10-4-27, nw se ne 27-28-27, pump 47 bbls 13.8-gr oil, 16 wtr, 281 ft perf 2500 ft, Chanac 2095 ft, td 2510 ft.

Kern County — Midway - Sunset: Chanslor Canfield Midway Oil Co.'s G 33-25, 660 ft n 865 ft w c 25-31-22, pump 20 bbls 18-gr oil, 3 wtr, perf 2272-2647 ft, Mulinia 2316 ft, td 2650 ft.

General Pet.'s Moco 35-371, nw sw se 35-12-24, pump 138 bbls 13.5-gr oil, 53 wtr and sand, perf 1715-1926 ft, td 2180 ft, pb 1928 ft.

Union's Mid-Northern 7, sw nw ne 7-11-23, pump 282 bbls oil, 56 wtr and sand, 70 ft perf 1889 ft, oil sand 1822 ft, Miocene 1854 ft, td 1892 ft.

Kern County—Poso Creek: Pacific Western's Enas Fee 25A, ne nw sw 20-27-27, pump 7 bbls oil, 1 wtr, 120 ft perf 2110 ft, td 2110 ft.

Los Angeles County—Aliso Canyon: Tide Water's Porter 46, 28-3-16, flow 2440 bbls 24.1-gr, 1,250,000 gas, ½-in, 740/550 lbs, 215 ft perf 7929 ft, td 7963 ft, pb 7932 ft.

Los Angeles County—Del Valle: Ohio's Vasquez 7, 17-4-17, flow no est, perf 5315-5260, 5025-05 ft, 1st oil sand 5044 ft, td 5341 ft.

Los Angeles County — Wilmington: Long Beach Oil Dev. Co.'s "W" 69, 10-5-13, pump 193 bbls 17.6-gr, 306 ft perf 2907 ft, td 2912 ft.

O. M. Slosson's Ronan 1, 255 ft s 128 ft e c/l Sandison and Gulf, 29-4-13, pump 125 bbls 14.5-gr oil, 40 wtr, perf 3092-3316, 3515-3715 ft, td 3717 ft.

Union Pacific's 235, 6224 ft s 1314 ft e c/l Ford and Anaheim, flow 304 bbls 30.6-gr, 0/400 lbs, 487 ft perf 5314 ft, td 5314 ft.

Union Pacific's E-41, 7137 ft s 3524 ft e c/ls Ford and Anaheim, flow 227 bbls 20.4-gr, 580/730 lbs, 329 ft perf 2757 ft, td 2776 ft.

Orange County—Huntington Beach: Holly Oil Co.'s 10, sw ne sw 35-5-11, pump no est, 40 ft perf 3899 ft, td 3899 ft.

Standard's A-56, 3035 ft nwly on c/l Wesley Ave proj fr 23rd St th 350 ft nely at r/a, pump 94 bbls oil, 11 wtr, perf 3031-3101, 3161-3271, 3311-3480 ft, td 3555 ft, pb 3482 ft.

Santa Barbara County—Santa Maria Valley: Union's Enos 2-19, nw sw sw 19-10-33, pump 63 bbls oil, 40 sand and wtr, 702 ft perf 2818 ft, td 2820 ft.

Union's Vincent 12, sw se ne 25-10-34, pump 500 bbls 15.6-gr oil, 160 wtr, 1199 ft perf 4762 ft, td 4764 ft.

Ventura County—Rincon: Chanslor Canfield Midway Oil Co.'s Hobson A-12, se se sw 14-3-24, flow 427 bbls 31-gr, 274,000 gas, 30/64-in, 180/0 lbs, perf 7620-7725, 7480-7610 ft, 2½-in 7461 ft, td 9385 ft.

Richfield's Hobson State F-7, (OWDD) 17-3-24, flow 620 bbls 28.2-gr, 155 wtr, ¼-in, 190/440 lbs, 60 ft perf 2835 ft, whipstocked 730 ft, td 2938 ft.

Ventura County—Shiells Canyon: Los Nietos Co.'s Elkins 2-1, ne ne se 5-3-19, pump 96 bbls, 199 ft perf 2989 ft, Elkins 2837 ft, td 3989 ft.

CALIFORNIA WILDCATS

Kern County—Discovery: Shell's Afana 1, nw nw nw 18-29-29, East Kern River area, 30-bbls 15.2-gr oil, 70 wtr, 36 ft perf 1035 ft, td 1035 ft.

Kern County—Failures: E. B. Hall & Co.'s Russell 1, 6-28-29, Round Mt. area, abnd 1171 ft.

Richfield's Tejon B-54-35, se ne nw 35-11-19, Tejon Ranch area, oil zone 2360 ft, Santa Margarita 2585 ft, Reserve 3920, abnd 4542 ft.

COLORADO

Jackson County—North McCallum: Continental's Pollock 1-B, c nw ne 11-9n-79w, Dakota sand 5200-5388 ft, perf 300 holes 5270-5330 ft, flow 262 bbls, 13,000,000 carbon dioxide gas.

Moffat County—Ites: Stanolind's Parkinson 35-SD "A," nw ne ne 22-4n-92w, flow 72 bbls, 11/64-in, Sundance sand 3350-3555 ft.

COLORADO WILDCAT

Huerfano County—Failure: S. W. Pressey's Fee 1, cwl nw se 3-27n-67w, St. Mary's area, lost hole, abnd 1250 ft.

ILLINOIS

Bond County: W. C. McBride's Jacobs 2, c se se nw 31-4n-2w, pump 40 bbls, td 1124 ft.

Clay County: W. C. McBride's Palmer 4, nw se se 34-4n-7e, Cyp 2587-98 ft, pump 41 bbls, td 2598 ft.

Edwards County: Superior's Danielson 2, se sw ne 28-1s-14w, abnd 3081 ft.

Mabee Oil & Gas Co.'s Frankland 1, sw nw se 20-2s-14w, pump 16 bbls, td 3160 ft.

Skelly's Whitehead 1, se nw nw 7-2s-11e, pump 46 bbls, td 3050 ft.

Franklin County: E. S. Adkins' Sharkey 2-T, nw se ne 30-7s-3e, abnd 2205 ft.

Gallatin County: Carter's Curry 4, se ne nw 15-8s-10e, pump 240 bbls, td 1987 ft.

Hamilton County: Texas Co.'s McGill Comm 1, nw se se 26-6s-6e, pump 94 bbls, td 3107 ft.

Texas Co.'s Webb 1, se ne ne 24-6s-6e, pump 24 bbls, 2458 ft.

Jefferson County: Bell Bros. Indiana Nat'l Bank "A" 2, ne se ne 24-1s-3e, abnd 2880 ft.

Magnolia's Mills-Railroad Unit 1, nw nw nw 24-1s-4e, abnd 3024 ft.

Mohawk Drlg. et al's Wood Comm 1, nw se 13-2s-4e, McCl 3084 ft, pump 198 bbls, td 3111 ft.

Texas Co.'s State Game Reserve "B" 3, ne ne sw 28-3s-3e, abnd 2948 ft.

Marion County: Texas Co.'s Boles 2, nw sw nw 15-1n-2e, pump 85 bbls, td 2111 ft.

Saline County: Jarvis et al's Sisk "A" 1, nw nw se 15-10s-6e, abnd 2021 ft.

Wabash County: C. R. Ross' Akin 3, sw nw nw 7-3s-13w, pump 180 bbls, td 2496 ft.

Shell's Baumgart 1, sw sw ne 20-1n-12w, pump 22 bbls, 2393 ft.

C. E. Skiles' Wood 1, sw se sw 20-1n-12w, Biehl 1523 ft, pump 60 bbls, td 1545 ft.

Wayne County: Smith & Miller's Maxey-Brown Comm 1, sw nw sw 7-2s-5e, abnd 3104 ft.

Pure's Frazier 2, sw ne 15-1n-8e, McCl 3084 ft, flow 1021 bbls, td 3165 ft.

Pure's Rogers 1, c nw nw 23-1n-8e, McCl 3051 ft, flow 455 bbls, td 3140 ft.

Pure's Flexter 2, nw sw se 34-2n-7e, pump 301 bbls, td 2962 ft.

Pure's Plew 2, se sw ne 34-2n-7e, abnd 3142 ft.

White County: Superior's Ford et al 26, se nw se 4-5s-14w, abnd 738 ft.

ILLINOIS WILDCATS

Clinton County—Failure: J. L. May's Gross 1, ne se ne 31-2n-2w, abnd 1300 ft.

Fayette County—Failure: Texas Co.'s Howard-Whitford 1, se se sw 27-5n-4e, abnd 2675 ft.

Jefferson County—Failure: Texas Co.'s Cowger 1, nw nw nw 11-3s-3e, abnd 3085 ft.

Union County—Failure: Nation Oil's Gray 1, se nw se 2-11s-1e, abnd 1949 ft.

Washington County — Failure: Magnolia's Torrens 1, ne ne nw 30-3s-3w, abnd 1638 ft.

White County—Discovery: Superior's Greathouse 15, nw ne se 4-5s-14w, pump 25 bbls, td 730 ft.

INDIANA

Decatur County: Public Service's Walker 239, se nw nw 36-10n-9e, 83,000 gas, td 957 ft.

Gibson County: Continental's Kleiderer "A" 16, sw se ne 33-3s-14w, pump 492 bbls, td 2899 ft.

Howard County: Stahl's Fee 1, se ne nw 8-23n-4e, 50,000 gas, td 918 ft.

Pike County: Holland's McAttee B-3, ne ne sw Lot 146-1n-9w, pump 15 bbls, td 1028 ft.

Rush County: Eastern Indiana Gas Co.'s

Wells Completed in the United States in Week Ended March 11, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama	1	....	....	....	1	....	....	....	....	....	1	....	1	....
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Arkansas	2	....	....	1	3	....	....	....	2	2	5	2	32	39
California	29	....	....	....	29	....	1	....	2	3	32	32	354	228
Colorado	2	....	....	....	2	....	....	....	1	1	3	....	8	5
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Illinois	15	....	....	9	24	....	1	....	5	6	30	34	308	364
Indiana	2	3	....	....	5	....	1	....	2	3	8	3	75	57
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	2
Kansas	18	....	....	12	30	....	2	....	8	10	40	26	376	277
Kentucky	7	....	....	....	7	....	1	....	2	3	10	8	98	51
Louisiana	6	....	....	2	8	....	....	....	....	....	8	12	117	108
North Louisiana	5	....	....	1	6	....	....	....	....	....	6	1	37	44
South Louisiana	1	....	....	1	2	....	....	....	....	....	2	11	80	64
Michigan	2	1	....	....	3	....	1	....	8	9	12	9	121	82
Mississippi	....	....	....	....	....	....	....	....	....	....	....	....	22	15
Missouri	....	....	....	....	....	....	....	....	....	....	....	2	6	2
Montana	5	....	....	3	8	....	....	....	....	....	8	4	55	38
Nebraska	....	....	....	*	....	....	....	....	....	....	....	....	7	13
New Mexico	5	....	....	5	10	....	....	....	1	1	11	13	87	48
New York	15	....	10	....	25	....	....	....	....	....	25	25	248	230
Ohio	2	1	6	2	11	....	....	....	....	....	11	5	156	175
Oklahoma	7	....	....	6	13	....	....	....	....	....	13	37	294	263
Pennsylvania	28	4	18	1	51	....	....	....	....	....	51	48	553	470
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	3	1
Texas	62	4	....	23	89	6	2	2	26	30	125	88	1,031	729
E.Tex.Bor. Co.'s	....	....	....	....	....	....	....	....	....	....	....	....	4	4
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Rest of E. Texas	2	....	....	....	2	....	....	....	3	3	5	3	53	41
North Texas	23	....	....	8	31	1	1	....	6	7	39	19	233	170
W. Central Tex.	2	....	....	3	5	4	....	....	2	2	11	2	76	60
West Texas	23	....	....	3	26	1	....	....	2	2	29	33	276	160
Tex. Panhandle	2	3	....	....	5	....	....	....	....	....	5	2	35	55
G. Coast, Upper	5	....	....	2	7	....	....	....	4	4	11	2	92	48
G. Coast, Lower	4	....	....	6	10	....	1	1	3	5	15	15	174	103
Southwest Texas	1	1	....	1	3	....	....	1	5	6	9	11	72	70
S. Central Tex.	....	....	....	....	....	....	....	....	1	1	1	1	15	16
West Virginia	....	14	....	1	15	....	....	....	....	....	15	23	196	121
Wyoming	4	....	....	....	4	....	2	....	2	4	8	1	32	28
Total U.S.	212	27	34	65	338	6	11	2	59	72	416	372	4,181	3,346

* Includes distillate wells † Includes salt water disposal wells.

Johnson 3, nw nw nw 35-13n-9e, 40,000 gas, td 909 ft.

INDIANA WILDCATS

Posey County—Discovery: Carter's Gould 1, se ne sw 32-6s-14w, pump 32 bbls, td 2982 ft.

Posey County—Failure: Sohio et al's Ford 1, ne ne sw 30-4s-13w, abnd 2927 ft.

Spencer County — Failure: Sohio et al's Baird 1, sw nw sw 26-7s-7w, abnd 1730 ft.

KANSAS

Barton County—Williamson: Texas Co.'s L. Harper 1, nw nw 10-18s-14w, 240 bbls, Lansing, td 3190 ft.

Barton County — Kraft - Prusa: Derby & Comanche's Dolechek 1, ne se nw 32-16s-11w, Erosive Arb 3335 ft, 1000 gals acid, 1166 bbls oil, 715 bbls wtr, 3346 ft.

Barton County — Beaver: (semi - wildcat) Vernon Oil & Gas' Weber 1, s se ne 7-16s-12w, Arb 3358 ft, abnd 3365 ft.

Barton County—Ainsworth: Black-Marshall et al's Ainsworth 7, Arb 3408-12 ft, pump 400 bbls, 3414½ ft.

Butler County — Eldorado: C. L. Brosins' Wooley 1, sw sw ne 16-25s-5e, Simp 2594-96 ft, pump 10 gals oil, 70 gals wtr, 2596 ft.

Butler County—Eldorado: Harry Wilson's Robbinson "A" 3, sw ne sw 17-25s-5e, Miss 2512 ft, pump 52 bbls, td 2553 ft.

Ellis County — Bemis: Champlin's Hadley "L," e sw se 30-11s-17w, Solid Arb 3593 ft, 2000 gals acid, 100 bbls, 3613 ft.

Ellsworth County — Click: (semi - wildcat) Phillips' Alman 1, se se sw 35-17s-7w, Arb 3663 ft, abnd 3682 ft.

Greenwood County—Virgil: Rockhill Sand & Gravel's F. Berry 1, se ne nw 32-23s-13e, Miss 1640 ft, abnd 1675 ft.

Greenwood County—Beaumont: K. T. Weidemann's E. C. Edgar "A" 3, se nw ne 2-28s-8e, Arb 2780 ft, abnd 2827 ft.

Leavenworth County—McLouth: Sherrod & Apperson's Lollar 1, nw sw se 9-10s-21e, Miss 1254 ft, abnd 1401 ft.

McPherson County—Lindsborg: Mabee Oil's Berglund 2, w½ ne se 6-17s-3w, Viola 3360, 204 bbls, 3368 ft.

Phillips' Weddle 1, w½ nw nw 31-17s-3w, Viola 3367, 1500 gals acid, 120 bbls, 3378 ft.

Bay Pet.'s S. Hoglund 1, c se ne 13-17s-4w, Viola 3405, td 3488 ft, pb and abnd 3415 ft.

Pawnee County—Pawnee Rock: Barbara Oil & Gas' Wickstrom 1, s½ se nw 12-20s-16w, Cherty Cong 3776 ft, abnd 3802 ft.

Phillips County—North Dayton: Magnolia's A. H. Morgan 2, c se sw 12-2s-19w, Lansing 3308-81 ft, 2000 gals acid, 203 bbls, td 3430 ft, pb 3369 ft.

Pratt County—Carmi: Aladdin's Hoeme 1, sw sw sw 20-26s-12w, Arb 4294 ft, 125 bbls, td 4390 ft.

Shell's O. Hoeme 3, sw nw nw 29-26s-12w, Arb 4275-80 ft, 1000 gals acid, 197 bbls fluid, 98% wtr, 4298 ft.

Pratt County — Cunningham: Tidewater's Royse 2, e½ nw se 3-28s-11w, pay 3567-73 ft, 1000 gals acid, pump & flow 500 bbls, 3573 ft.

Reno County—North Hilger: Phillips' Cohan 1, c se se 33-25s-4w, Viola 4094 ft, pump 459 bbls, 4096 ft.

Reno County—Lerado: (semi-wildcat) Phillips' Wyman 1, nw ne sw 21-26s-9w, Viola 4177-81 ft, 93 bbls, 4188 ft.

Rice County—Silica Pool: Stanolind's Roth 2, ne se nw 29-19s-10w, Arb 3293 ft, abnd 3338½ ft.

Rice County—Bornholdt: Continental's Carlson 3, cen w½ sw ne 36-20s-6w, pay 3337-48 ft, 400 bbls, 3348 ft.

W. C. McBride's Harter 1, ne sw nw 36-20s-6w, Miss chat 3341 ft, abnd 3394 ft.

Russell County—Hall-Gurney: Shell's Dumler 2, c sw nw 24-14s-14w, granite 3238-51 ft, td 3651 ft, pb and abnd 3000 ft.

Russell County—Forrest Hill: Appleman's Grizzell 1, n½ nw nw 33-15s-12w, Arb 3284 ft, 1000 gals acid, 25 bbls oil, 10 bbls wtr, td 3300 ft, pb 3295 ft.

Russell County — Trapp: Earl Wakefield's Meharg 3, n½ sw se 16-15s-13w, Arb 3338-45 ft, 300 bbls, 3345 ft.

Russell County — Boyd: Texas' D. Boxberger 2, cw sw nw 15-14s-14w, oil, 283 bbls, 3060 ft.

Stafford County—Drach: H. J. Hall's Teichmann 1, n½ ne se 18-22s-12w, Arb 3728 ft, abnd 3746 ft.

Stafford County—Farmington: Skelly's A. Young 1, sw nw se 34-24s-15w, Arb 4407 ft, 1500 gals acid, test 9160 bbls oil, 4421 ft.

KANSAS WILDCATS

Barton County—Failure: Falcon Seaboard's Beals 1, n ne se 22-19s-15w, abnd 3628 ft.

Cowley County—Failure: Grallup & McNish's Reidy 1, nw ne sw 15-32s-7e, abnd 2850 ft.

Doniphan County—Failure: Gall et al's Cudle 1, nwc se 18-3s-20e, abnd 2090 ft.

Ellsworth County—Failures: Phillips' Urbanek 1, sw sw se 7-15s-8w, abnd 3169 ft.

Cities Service Cambell 1, nec sw 12-17s-8w, Arb 3476 ft, abnd 3511 ft.

Greenwood County—Failure: McGinnis' Nesbitt 1, nw ne se 28-24s-11e, Miss 1907 ft, abnd 2040 ft.

Marion County—Failure: Westgate Greenland's Eilers 1, c w sw se 15-17s-1e, Hunton 3090 ft, Viola 3278 ft, abnd 3318 ft.

Reno County—Failure: R. & R. Drlg.'s Blubaugh 1, nw se 36-24s-4w, Arb 4075 ft, abnd 4095 ft.

Rooks County — Discovery: Continental's Brueggeman 1, ne 5-10s-20w, Arb 3823 ft, perf 3824-3843 ft, swab 50 bbls per hr, td 3843 ft.

Stafford County—Discovery: Atlantic's Niel 1, nw ne 27-24s-14w, Arb 4225 ft, 2500 gals acid 4225-32 ft, 221 bbls oil per hr, 31 bbls wtr, td 4240 ft.

KENTUCKY

Breckenridge County: J. C. Ellis' Richards 18, sw sw nw 12-O-34, pump 40 bbls, td 379 ft.

Daviess County: Miller et al's Coomes 1, ne nw sw 11-N-27, pump 60 bbls, td 1845 ft.

Miller et al's Miller 4, sw sw nw 9-N-27, pump 110 bbls, td 1869 ft.

Miller et al's Miller 5, nw sw sw 11-N-27, pump 60 bbls, td 1878 ft.

Henderson County: Sun et al's Tapp-Drury 1, nw sw se 1-O-20, pump 76 bbls, td 2560 ft.

Carter's Rhodes 1, se ne se 4-O-21, pump & flow 1476 bbls, td 2607 ft.

Union County: Sun's Biggs 3, nw se sw 11-P-19, pump & flow 240 bbls, td 2188 ft.

KENTUCKY WILDCATS

Livingston County—Failure: Shell's Washer 1, 14-G-34, abnd 1865 ft.

McLean County—Failure: c se se se 21-L-27, abnd 2274 ft.

Webster County—Discovery: c se sw se 10-N-23, Sinclair-Prairie's Ashby 1, pump & flow 205 bbls, sand 1798-1808 ft, td 1811 ft.

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De Soto Parish — Kingston - Holly: Sohio's Farmer 1, c sw ne se 32-14n-13w, pump 125 bbls, perf 2803-30 ft.

Texas Mineral Lands Co.'s E. L. Scott 4, c ne sw nw 33-14n-13w, flow 460 bbls 39.6-gr, perf 2780-94 ft.

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H. W. Snowden's E. P. Lee 1, c ne nw sw 33-14n-13w, pump 25 bbls, perf 2800-40 ft.

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St. Charles Parish — Paradis: Texas Co.'s Abraham 1, 13,584 ft s 269 ft e of ne cor frac

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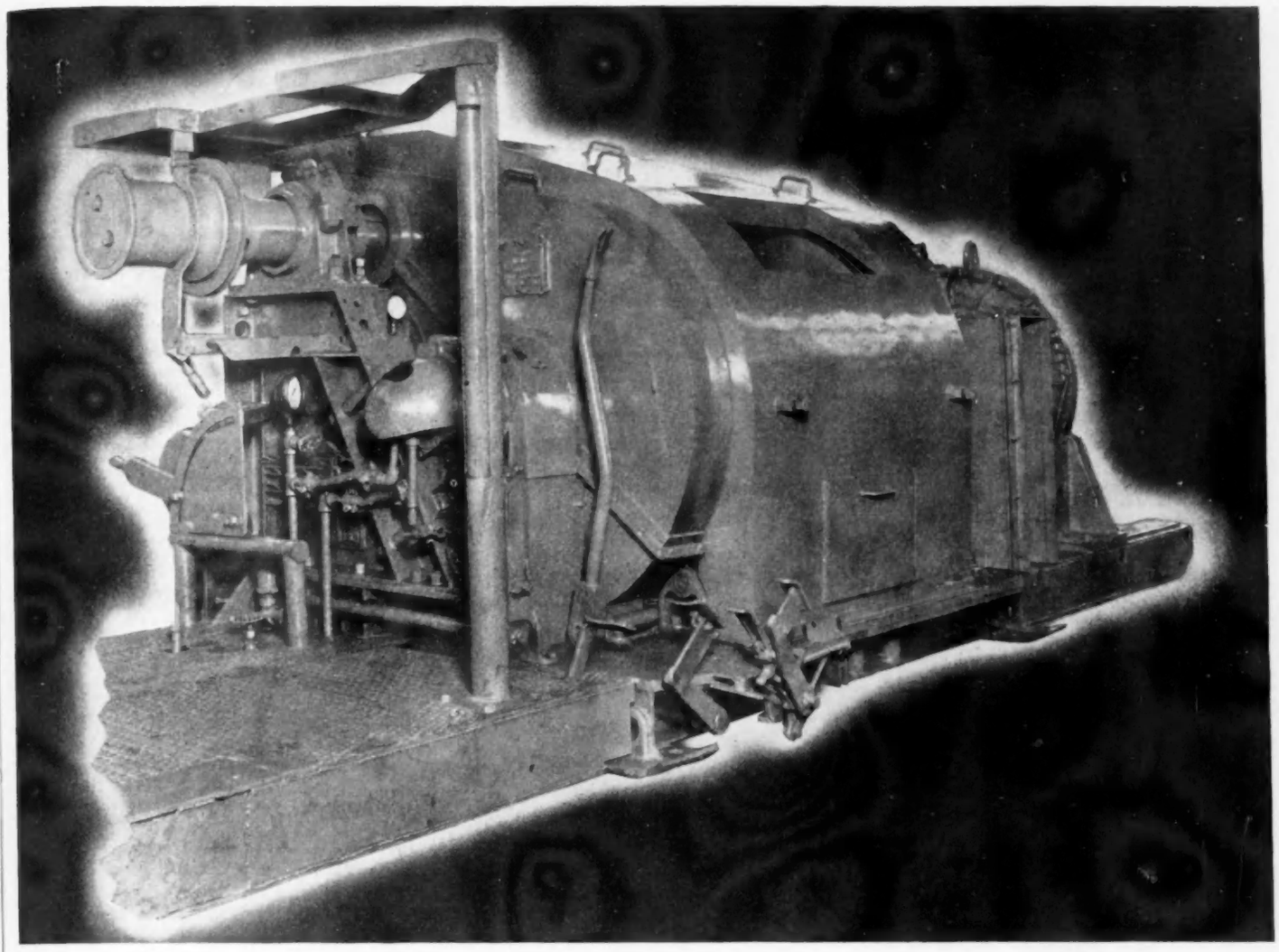

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Terrebonne Parish—Deer Island: Humble's Continental Land & Fur 5, start se cor sec 23, go w'ly on sl for 660 ft, th n'ly parallel to el 660 ft to lcn in 23-18s-12e, abnd 11,025 ft.

Iberia Parish: Tide Water's Miami Corp. 1, Shark Island area, 1980 ft n 660 ft e of sw cor 9-15s-6e, lcn 12,000-ft test.

MICHIGAN

Allegan County — Fillmore: Devonian and Lang's Dozeman 2, ne se ne 11-4n-15w, Traverse, flow 240 bbls, td 1526 ft.

Gladwin County—Buckeye: Basin Oil Co.'s Smith 2, c sw ne 9-17n-1e, Dundee, flow 190 bbls, td 3606 ft.

Newaygo County—Woodville: Ohio Oil Co.'s Unit 11, c sw 28-15n-11w, Stray sand, 260,000 gas, td 1211 ft.

MICHIGAN WILDCATS

Gratiot County — Failure: C. W. Teater's Church 1, ne sw ne 9-12n-3w, Marshall sand, abnd 1250 ft.

Isabella County — Failure: Rex Oil & Gas Co.'s Nurnberger 1, nw ne ne 25-16n-3w, Dundee 3759 ft, abnd 4002 ft.

Lake County — Failure: C. L. Maguire's Choponis 1, nw nw nw 30-20n-11w, Dundee 3387 ft, Monroe 3450 ft, abnd 3478 ft.

Mecosta County—Failure: Chapman Oil Co.'s Stehower 1, e½ se ne 29-13n-8w, Dundee 3490 ft, abnd 3615 ft.

Midland County—Failure: Sun's Porte 1, n½ ne nw 15-16n-2w, Dundee 3834 ft, abnd 4009 ft.

Montcalm County—Discovery: Stewart Oil Co.-Burks Whites' Jorgensen 1, c ne ne 14-12n-6w, elev 934 ft, Stray sand 1239 ft, Traverse 2950 ft, Dundee 3470 ft, pay 3474-77 ft, flow 93 bbls, td 3477 ft.

Muskegon County—Failure: E. B. Strom's Rettenhouse 1, nw se se 24-9n-15w, Traverse, abnd 1867 ft.

Van Buren County—Failures: Clock Oil Co.'s Decker 1, se nw ne 31-1s-15w, Traverse, abnd 1165 ft.

S. L. McCall's Jennings 1, sw sw ne 12-1s-16w, Traverse, abnd 1160 ft.

MONTANA

Glacier County—Cut Bank: Carter Oil Co.'s Olson 1, c ne nw 26-34n-6w, Cut Bank 2870-2948 ft, abnd 2970 ft.

Texas Co.'s Fee 4, nw nw ne 31-32n-5w, swab 65 bbls 70 qts nitro, Cut Bank 2925-83 ft, 7-in 2943 ft, pay 2974-83 ft, td 3019 ft, pb 2985 ft.

Toole County—Kevin-Sunburst: Neptune Oil & Gas Co.'s Govt 9, se nw se 19-36n-2w, pump 25 bbls, 500 gals acid Ellis-Madison 1500-12 ft.

Pfabe & Engelking's Danielson 3, nw ne ne 20-35n-1w, pump 60 bbls, td 1571 ft.

Prevol & Shay's Govt 10, sw sw sw 11-35n-3w, pump 221 bbls 10-day avg, td 1848 ft.

Prevol & Shay's Wait 16, nw ne ne 24-35n-2w, Ellis-Madison 1535 ft, pb and abnd 1551 ft.

Texas Co.'s Baker 19, sw ne sw 3-35n-2w, 500 gals acid Ellis Madison 1691 ft, pump 104 bbls oil, 26 bbls wtr, td 1700 ft.

Toole County—Kevin-Sunburst: Texas Co.'s Emmert 12, nw se sw 15-35n-2w, Ellis-Madison 1476 ft, acid break 1515-25 ft, abnd 1620 ft.

NEW MEXICO

Eddy County: Brewer Dr. Co.'s Hoffman 2, sw sw se 24-18s-26e, flow 20 bbls, 2-in, shot 100 qts 1066-78 ft, td 1088 ft.

Brewer Dr. Co.'s Williams 3, nw nw ne 25-18s-26e, flow 25 bbls, 2-in, shot 100 qts 1063-78 ft, td 1085 ft.

Fren Oil Co.'s Freiss 5, c se se 19-17s-31e, flow 160 bbls, 2-in, shot 320 qts 1923-2023 ft.

Metcalf-Fulton et al's State-Momsen 1, c se ne 16-21s-28e, abnd 2659 ft.

Paton Bros.' State 1, nw nw se 21-17s-28e, pump 20 bbls, shot 200 qts 1930-2009 ft.

Penn Surgical Co.'s Dunn 2-C, ne sw se 7-18s-29e, abnd 2702 ft.

Premier Oil So.'s Parke 4-F, c sw se 3-17s-30e, abnd 3375 ft.

Premier Oil Co.'s Parke 4-F, c sw se 3-17s-31-17s-30e, abnd 3391 ft.

Shuster et al's Vickers 1, c sw nw 24-20s-28e, elev 3240 ft, abnd 987 ft.

Lea County—Arrowhead: Gulf's State-Leonard 6-C, c se nw 36-21s-36e, flow 714 bbls, 2-in, Capitan 3735-3830 ft.

NEW MEXICO WILDCAT

Eddy County—Failure: Mac T. Anderson et al's Millman 1, nw se ne 33-19s-28e, abnd 2011 ft.

OKLAHOMA

Creek County—S. E. Stroud: J. E. Crosbie's Elle 6, nw sw ne 17-14n-7e, Prue 2845 ft, shot 280 qts, 75 bbls, 2919 ft.

Creek County—Bruce: L. B. Jackson's Chisholm 4, nw se nw 3-17n-9e, lime 3310 ft, abnd 3360 ft.

Logan County—S. Lovell: Davon's Miller 1, c ne se 4-17n-4w, Layton 4980 ft, shot 75 qts, 100 bbls, 5016 ft.

Noble County—Un-named Pool: Cities Service's Hansen 1, nw nw nw 6-21n-2e, 2nd Wilcox 4590 ft, abnd 596 ft.

Okfuskee County—N. W. Bearden: Foundation's Scott 3, c ne 1-10n-8e, Cromwell 3528 ft, shot 18 qts, flow 85 bbls, 3535 ft.

Okfuskee County — S. Dill: Shell's J. W. Friend 1, nw ne nw 23-11n-8e, Hunton 3998 ft, abnd 4081 ft.

Okfuskee County—Blakely: Sunray's Brook "B" 1, se sw ne 35-12n-10e, Cromwell 3092-3104 ft, abnd 3119 ft.

Okfuskee County — Un-named: Northern Ordnance's Klabzuba 1, c sw nw 7-13n-7e, Redfork 3226 ft, shot 20 qts, flow 127 bbls, td 4139 ft, pb 3275 ft.

Oklahoma County—Oklahoma City: Anderson-Prichard's Page 2, se se se 35-12n-3w, Tonkawa 4175 ft, pump 4 bbls oil, 40 bbls wtr, td 4183 ft, pb 3990 ft.

Okmulgee County—Okmulgee: John Bogue's Haynes 1B, ne nw nw 36-14n-12e, Booch 1650-67 ft, shot 55 qts, 20 bbls, 1667 ft.

Seminole County—Jackson: Mid-Continent's Johnson 3, nw se nw 23-8n-7e, Wapanucka 3358 ft, abnd 3360 ft.

Stephens County—W. Loco: Texas Co.'s Bristow 4, nw sw nw 8-3s-5w, Loco sd, 2 bbls, 1091 ft.

Tulsa County—Mounds: Indo's Johnson 1 "B," se se sw 15-16n-12e, 2nd Dutcher 2105-2143 ft, abnd 2152 ft.

WEST TEXAS

Andrews County—Fullerton: Champlin Ref. Co.'s University 1, c ne nw sec 16, blk 13, flow 504 bbls, ¾-in, 12,000 gals acid, 6855-7055 ft.

Mid-Continent's Ellers 3, c nw ne PSL 14, blk A-32, elev 3340 ft, San Andres 4500 ft, Glorietta 5615 ft, Fullerton 6550 ft, flow 2513 bbls, 2-in, 6807-7068 ft.

Andrews County—Union: Union Oil Co.'s Biles 2, c sw se PSL 12, blk A-31, elev 3386 ft, San Andres 4410 ft, San Angelo 5580 ft, Clear Fork 6050 ft, flow 270 bbls, ½-in, 19,000 gals acid 6840-7500 ft.

Andrews County—Mabee: Texas Co.'s Mabee 4, c se ne G&MMB&A 36, blk 40, T-2-N, elev 2906 ft, Grayburg 4360 ft, San Andres

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Crockett County—Crockett: F. & J. Co.'s University-Gulf 7-17, 3070 ft snl 1965 ft ewl sec 17, blk 14, pump 30 bbls, shot 80 qts 1495-1600 ft.

Crane County—Dune: Magnolia's University 2-16, sw se se sec 16, blk 30, abnd 3227 ft.

Crane County — McCamey: J. M. Hickey (was Texas Consolidated Oil Co.'s) Hughes-Texaco 11-C, 1646 ft nsl 330 ft wel GC&SF 4, blk R, jkd and abnd 1020 ft.

Ector County—North Cowden: Atlantic & Sun's Holt 2-B, T&P 6, blk 43, T-1-N, pump 329 bbls, shot 250 qts 4420-4520 ft.

Sun's Holt 3-F, 555 ft nsl 764 ft wel T&P 9, blk 43, T-1-N, pump 263 bbls oil, 11 bbls wtr, shot 525 qts 4614-4808 ft, td 4816 ft.

Texas Co.'s Holt 33, c sw ne T&P 11, blk 43, T-1-N, pump 144 bbls, shot 500 qts 4450-4720 ft.

Hockley County—Slaughter: T. F. Morrow et al's Mallet 61, c lab 23, Lge 48, Edwards CSL, flow 491 bbls, 10,000 gals acid 4935-75 ft.

T. F. Morrow et al's Mallet 62, c lab 22, Lge 48, flow 816 bbls, 10,000 gals acid 4925-82 ft.

Gulf's Gordon 6, 660 ft ewl 5280 ft snl PSL 12, blk X, flow 1246 bbls, 12,000 gals acid 5030-72 ft.

M. C. Starkey et al's Elliott 2-C, 440 ft out ne cor e½ lab 3, Lge 42, Rains CSL, flow 726 bbls, cas 8000 gals acid 4830-77 ft.

Texas Co.'s Slaughter 149, 580 ft out se cor lab 73, Lge 38, Zavalla CSL, flow 2083 bbls, 12,000 gals acid 4965-5030 ft.

T. P. Coal & Oil Co.'s Jackson 2, 560 ft nsl 580 ft ewl lab 25, Lge 43, Rains CSL, flow 385 bbls, 10,000 gals acid 4848-4900 ft.

Howard County: Continental-Group 1 Oil Corp.'s Settles 3-B-S, nw ne sw W&NW 160, blk 20, abnd 1420 ft.

Howard County—Moore: J. B. Hawley Jr.-Northern Ordnance's Cowden 2, nw sw ne T&P 18, blk 32, T-1-S, pump 39 bbls oil, 9 bbls wtr, shot 768 qts 3190-3250 ft.

Mitchell County—Westbrook: Col-Tex Ref. Co.'s Abrams-T. P. Land Trust 8, ne se nw T&P 41, blk 28, T-1-N, pump 42 bbls, shot 1400 qts 2945-3115 ft.

Col-Tex Ref. Co.'s Morrison 6, 1655 ft snl 976 ft ewl T&P 28, blk 28, T-1-N, pump 87 bbls, shot 1050 qts 2945-3075 ft, 250 qts 2950-3075 ft.

Col-Tex Ref. Co.'s Standard of Texas 4, 330 ft snl 2332 ft ewl T&P 15, blk 28, T-1-N, pump 98 bbls, shot 1400 qts 2918-3090 ft.

Ward County—Gulf-O'Brien: Gulf's O'Brien 205, se ne ne G&MMB&A 12, blk F, flow 1032 bbls, 2-in, shot 672 qts 2670-2975 ft.

Winkler County—Emperor: Skelly's Halley 67, ne se nw PSL 13, blk B-12, flow 366 bbls, ½-in, shot 360 qts 2735-2870 ft.

Winkler County—Weiner: Ralph Lowe et al's Brown-Altman (Humble) 14, sw ne se PSL 24, blk B-5, flow 220 bbls, 1-in, shot 100 qts 3115-65 ft.

Yoakum County—Wasson: Humble's Randell 26, c ne nw sec 835, flow 474 bbls, ½-in, 7000 gals acid, perf 5000-5110 ft, td 5120 ft.

Shell's Baumgart 17-D, c sw ne sec 826, elev 3562 ft, Yates 3140 ft, brown lime 4060 ft, flow 975 bbls, ½-in, 10,000 gals acid 4964-5162 ft.

T. P. Coal & Oil Co.'s Bennett 40, c se nw sec 695, flow 781 bbls, 2-in, 10,000 gals acid 5170-5245 ft.

WEST TEXAS WELL DEEPENED

Winkler County — Keystone - Holt: Gulf's Keystone 12, 440 ft out ne cor PSL 10, blk B-3, elev 2963 ft, otd 3515 ft, flow 307 bbls oil, 27 bbls wtr, 2-in, 500 gals acid perf 4775-92 ft, td 4912 ft.

WEST TEXAS WILDCATS

Glasscock County—Failure: McElroy Ranch Co.-John W. Emch's Keithley 1, se se sw T&P 40, blk 34, T-3-S, elev 2681 ft, anhydrite 1400 ft, salt 1485 ft, Yates 2108 ft, Grayburg 2665 ft, abnd 3275 ft.

Reeves County—Failure: Chris Antone and R. O. Champeau's Wilson & Biggs 1, c ne ne sec 66, blk 112, W. H. Holder sur, abnd 2872 ft.

WEST CENTRAL TEXAS

Jones County — Strand: J. C. Hunter & Son's Russell 1, 553 ft out nw cor s½ H&TC 6 blk 5, elev 1536 ft, abnd 3502 ft.

Shackelford County: Roeser-Pendleton-Continental's Cook 21-A-117, 1427 ft wel 1030 ft nsl ne E. T. Ry. 117, pump 101 bbls, sand 1708-18 ft.

Roeser-Pendleton-Continental's Cook 6-A-139, 3468 ft snl 330 ft ewl sw E. T. Ry. 139, pump 105 bbls, 1621-25 ft.

Stephens County: E. H. R. Sabens et al's Turner 1, 990 ft wel 1180 ft snl S. P. Ry. sec 446, abnd 2062 ft.

Taylor County—Dunigan: Jas. B. Dunigan et al's Hunter 2, 200 ft out se cor lab 12, Lge 122, W. R. Willis sur, elev 1885 ft, Flippen 2461 ft, abnd 2502 ft.

WEST CENTRAL TEXAS WELLS DEEPENED

Jones County—Wimberly: W. D. Brookover's Church 1, se cor lot 88, otd 2446 ft, dual well, flow 1228 bbls, 7/16-in, 2000 gals acid 2504-14 ft, td 2563 ft.

Fain & McGaha's Tarpley 1, ne cor lot 104, otd 2335 ft, dual well, flow 897 bbls, ¾-in, 2000 gals acid 2480-2518 ft, td 2526 ft.

West Central Dr. Co.'s (was Butler-Horne et al's) Church 1, se cor w½ n½ lot 88, otd 2363 ft, dual well, flow 1200 bbls, 7/16-in, 2000 gals acid 2430-2500 ft, td 2554 ft.

West Central Dr. Co.'s (was Butler-Horne et al's) Fikes 1, ne cor s½ lot 105, otd 2375 ft, dual well, flow 1200 bbls, ¾-in, 500 gals acid 2515-53 ft, td 2559 ft.

WEST CENTRAL TEXAS WILDCATS

Callahan County—Failures: H. G. Daniels, Jr. et al's Duggan 1, 2440 ft ewl 990 ft snl S. P. Ry. sec 7, elev 2025 ft, abnd 1850 ft.

T. S. Stanfield et al's Heyser 1, 3150 ft snl 1470 ft wel w½ sec 20, Bayland O. A. Lands, abnd 546 ft.

SOUTHWEST TEXAS

Duval County—Agua Prieta: Taylor Refining Co.'s Sepulveda 3-B, 330 ft fr nl 1590 ft fr wl 199-ac lse, BS&F sur 297, abnd 5110 ft.

Duval County—Sejita: Standard of Texas' Casey 4, 270 ft fr el 4190 ft fr sl lot 2, blk 26, San Pedro de Charco Redondo Gr, 5½-in 5480 ft, perf 5790-5836 ft, 104 bbls, ⅛-in, td 5846 ft.

Jim Hogg County—Armstrong: Texas Co.'s Armstrong 2-B, 330 ft fr nl 1650 ft fr el Armstrong sur 297, 100-ac lse, 5½-in 3665 ft, perf 3650-52 ft, est 800,000 gas, ⅝-in, td 3675 ft.

SOUTHWEST TEXAS WILDCATS

Brooks County—Failure: Sun's Cage 4, 3000 ft fr wl 10,000 ft fr sl, Lenardo Vargas Guadalupe Gr, 9 mi sw LaGloria field, abnd 7435 ft.

Duval County — Failures: M. E. Davis' Barnes 1, 466 ft fr nl 2330 ft fr el Manuel Cadena sur 242, 2300-ac lse, abnd 6205 ft.

Taylor Refining Co.'s Parr 1-D, 480-ac lse, J. Rogers sur 118, 10 mi nw San Diego, abnd 5746 ft.

Jim Hogg County — Failure: Texas Co.'s Yaegar 1, 1165-ac lse, BS&F sur 163 & 165, 5 mi w Hebbronville, abnd 4509 ft.

Starr County—Discovery: Sun's Solis 1, 467 ft fr n&el's 60-ac lse, Sh 2-A, P. Longoria porc 94, 2 mi sw Frost field, 5½-in 4120 ft, perf 4072-80 ft, flow est 8,500,000 gas, td 5515 ft.

Zapata County—Failure: Coastal Refining Co.'s Leyendecker 1, 1650 ft fr el 2516 ft ne fr interior cor lse, blk 19, Mary Atwood sur, abnd 3505 ft.

SOUTH CENTRAL TEXAS WILDCAT

Guadalupe County — Failure: Joe Burt's Hartfield 1, 130-ac lse, E. Smith Lge 6, 3 mi n Lavernia, abnd 2056 ft.

LOWER TEXAS COAST

Bee County—West Cosden: H. B. Zachry Co.'s Page Est 1, 530 ft fr nwl 330 ft fr nel 95-ac lse, B. Q. Hadley sur, abnd 3858 ft.

Jim Wells County—Canalis: W. A. Richardson's Von Blucher 1, 467 ft fr n&el 40-ac tr, L. Best sur, abnd 7303 ft.

Jim Wells County—North Magnolia City: Humble's Magness 1, 1980 ft fr nl 660 ft fr el w½ blk 6, Adams-Staples subdvn, Jose Pacheco Gr, abnd 5323 ft.

Jim Wells County—Seeligson: Sun's Canales 29, 4620 ft fr most w'ly wl 3000-ac lse, BS&F sur 363, 5½-in 6057 ft, dual comp, perf 5567-76 ft, 46 bbls, ¼-in, perf 5970-79 ft, 56 bbls, ¼-in, td 6057 ft.

Texas Gulf Producing's Hewitt 3-A, 330 ft fr nl 990 ft fr wl 1650 ft fr el 160-ac lse, se sec 50, Haldeman subdvn, Seeligson Rch, dual comp, 7-in 6189 ft, perf 6015-30 ft, 150 bbls, 7/64-in, perf 4855-62 ft, 83 bbls, 3/32-in, td 6249 ft.

Kleberg County—Stratton: Humble's King Ranch-Paso Ancho, 1130 ft e of No. 12, 1350-ac lse, Paso Ancho de Abajo Gr, 5½-in 6704 ft, perf 6591-6501 ft, 105 bbls, ¼-in, td 6704 ft.

Nueces County—Agua Dulce: Osborne & Fleet's Dallas Joint Stock Land Bank 1, 660 ft fr nl 587 ft fr el tr 62, George Paul subdvn, Driscoll Rch, abnd 7232 ft.

Sam E. Wilson's First Trust 6, 2212 ft fr swl 2870 ft fr el 747-ac lse, B. L. de Jeans Gr, abnd 5658 ft.

Nueces County—Baldwin: Magnolia's Baldwin 16, 372 ft fr nl 330 ft fr el 140-ac lse, A. F. Martin sur 150, perf 3900-03 ft, jet 445 bbls, td 3944 ft.

San Patricio County—North Odem: Texas Conservative's Eilliott 1, 660 ft fr nw&sel blk 24, 263-ac lse, W. G. Burgess sur, 5½-in 3472 ft, abnd 5475 ft.

LOWER TEXAS COAST WILDCATS

Live Oak County—Failure: Humble's Pace 1, 292-ac tr, John H. McMullen sur 15, abnd 5010 ft.

Nueces County—Failure: Sun's Rewalt 1, 257-ac tr, Gregorio Farias Gr, 3 mi e Robstown, abnd 7403 ft.

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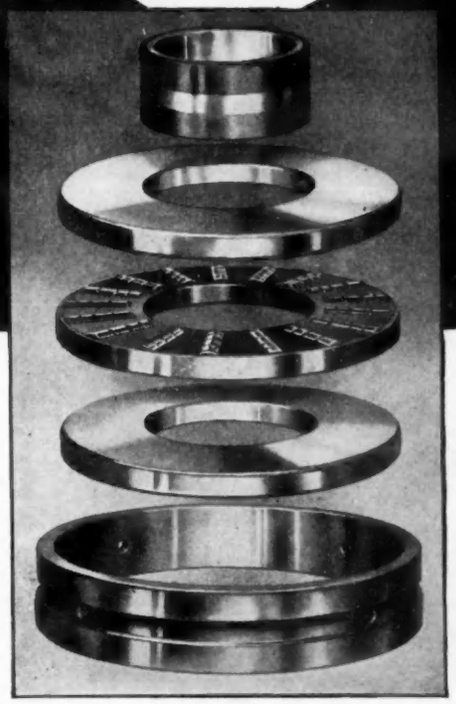
NO OBLIQUE RESULTANTS on rollers.



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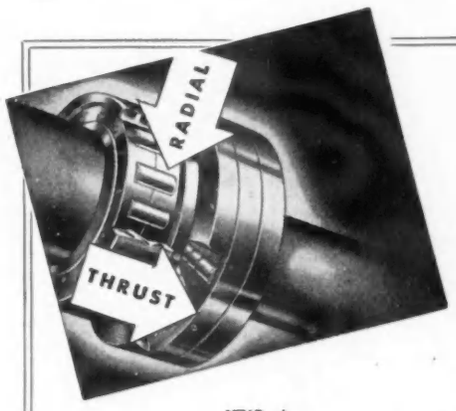

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BUILDING HEAVY-DUTY BEARINGS SINCE 1908 — BEARINGS

TEXAS GULF COAST

Chambers County—Stowell: Gulf's Wasson 1482 ft fr el 330 ft fr sl lot 7, Koch subdvn, L. Lopez sur, dual comp, 5½-in 7792 ft, perf 7779-91 ft, flow 303 bbls, 5/32-in, perf 7610-34 ft, flow 347 bbls, 3/16-in, td 7792 ft.

Colorado County — Sheridan: Shell's Obelgoner 1, 330 ft fr nl 650 ft fr el, H. Fitzroy sur, abnd 80 ft.

Harris County—Humble: Texas Co.'s Stevenson Fee 55, 2299 ft fr sl 1643 ft fr el 517-ac lse, J. B. Stevenson sur, 7-in 4983 ft, perf 4885-4900 ft, flow 292 bbls, 11/64-in, td 5412 ft.

Jefferson County—Stowell: Gulf's Owens 1, 330 ft fr s&wl 40-ac unit, Theo. Koch subdvn, L. Lopez sur, 5½-in 7755 ft, dual comp, perf 7574-84 ft, 309 bbls, 3/16-in, perf 7746-54 ft, 447 bbls, 3/16-in, td 7775 ft.

Liberty County — Kirby: General Crude's Lostak 1, 61-ac tr, Meredith Duncan sur, 5½-in 6892 ft, perf 6308-26, 6396-6432, 6594-6610, 6798-6810, 6820-44 ft, flow 151 bbls, 5/32-in, td 7260 ft.

Liberty County—North Dayton: Noble & Baker's Quinette 2, 660 ft fr sl 330 ft fr wl lse, sec 125, 5½-in 931 ft, pumped 19 bbls, td 946 ft.

Matagorda County—Buckeye: United North & South's Dawdy 2, 683-ac tr, J. C. Keller sur, abnd 8273 ft.

TEXAS GULF COAST WILDCATS

Fayette County — Failure: Continental's Adamcik 1, 500-ac lse, Thomas Thompson Lge, 4 mi ne Cistern, abnd 4834 ft.

Jefferson County—Failure: Sinclair Prairie's Webb 1, 145-ac lse, sec 144, W. J. Webb sur, abnd 10,775 ft.

Liberty County—Failure: W. W. West's Fee 2, 586-ac tr sw flank Davis Hill, J. D. Martinez sur 6, abnd 6658 ft.

Matagorda County — Failure: Texas Co.'s Hamill 3, 3250 ft n nearest point on creek, 11,082-ac lse, William Baxter sur, 9 mi s Sargent, abnd 7500 ft.

EAST TEXAS

Navarro County—Corsicana-Powell: Byrd & Frost's Pugh 1, 4400 ft fr nel 2320 ft fr sel, Jas. Smith sur, pump 3 bbls oil, 250 bbls wtr, Woodbine 2881-82 ft.

Wood County—Quitman: Shell's Johnson 2, 467 ft snl 1771 ft ewl lse, J. Robbins sur, elev 431 ft, Paluxy 6278 ft, flow 756 bbls, ¼-in, broken pay 6290-6323 ft, td 6327 ft.

EAST TEXAS WILDCATS

Hopkins County—Failure: Sonac-Texas O&G Corp.'s Stubbs 1, 3500 ft snl 5100 ft ewl Thomas Lee sur, elev 503 ft, Pecan 2210-2390 ft, Austin 3780-3900 ft, Sub-Clarksville 3930 ft, Woodbine 4468 ft, Georgetown 5245 ft, Fort Worth 5800-10 ft, Goodland 6290 ft, Paluxy 6337 ft, abnd 6510 ft.

Limestone County—Failure: Fohs Oil Co.-J. A. Haffner's Black 1, 4050 ft fr sel 5100 ft fr ewl, L. Norvell sur, elev 543 ft, Austin 3176-3550 ft, Woodbine 3890 ft, abnd 4103 ft.

Robertson County—Failure: A. G. Hill et al's Anderson-Magnolia 1, 330 ft fr se and 330 ft fr m/e/wl of 245-ac tr, Joseph Webb sur No 51, elev 326 ft, Pecan 3400-3603 ft, Austin 4598-4800 ft, Georgetown 5365 ft, Edwards 5652-5702 ft, Paluxy 6095-6125 ft, Glen Rose 6218 ft, Travis Peak 7006 ft, Cotton Valley 8700 ft, Smackover 9995 ft, jkd and abnd 10,288 ft.

NORTH TEXAS

Archer County: M. W. Blair Oil Co.'s Turbeville 1, 150 ft nsl 2847 ft ewl, I. W. Gholson sur A-704, abnd 1050 ft.

Henry Grace Prod. Co.'s Henry 5, 2440 ft wel 1210 ft snl sec 35, blk 5, Clark-Plumb sur, pump 12 bbls, 919-31 ft, td 939 ft.

Henry Grace Prod. Co.'s Henry 6, 2090 ft ewl 610 ft snl sec 35, blk 5, pump 10 bbls, 908-12 ft.

Henry Grace Prod. Co.'s Henry 7, 2440 ft wel 810 ft snl sec 35, blk 5, pump 35 bbls, 911-15 ft.

Grace & Grace's Wear 3, 710 ft ewl 650 ft nsl lot 8, I. Holman sur A-162, pump 12 bbls, 1276-83 ft.

J. A. McCarthy & Coleman's Taylor 8-A, 463 ft snl 300 ft wel lot 13, ATNCL sec 17, abnd 570 ft.

Staley Oil Co.'s Strange 1, 200 ft out nw cor of e-80 ac sec 30, Clark-Plumb sur, abnd 1178 ft.

White & Duncan's Kinder 3-61, 170 ft ewl 880 ft nsl sec 61, blk 5, Clark-Plumb sur, pump 206 bbls, 1253-57 ft.

White & Duncan's Kinder 4-62, 330 ft wel 800 ft nsl sec 62, blk 5, Clark-Plumb sur, pump 100 bbls, 1249-56 ft.

Archer County—Little Wichita: Deep Oil Dev. Co.'s Wilson 29, 2310 ft snl 330 ft ewl ATNCL sec 118, elev 965 ft, Bend 4986 ft, abnd 5081 ft.

Phillips' Wilson-Luke 2, 330 ft snl 990 ft wel ATNCL sec 117, Bend 4859 ft, flow 427 bbls, ½-in, 750 gals acid perf 4856-69 ft, td 4891 ft.

Clay County: Fortex Oil Corp.'s Dallas Joint Stock Bank-Texaco 12, 1500 ft fr sel 200 ft fr swl s-200-ac of w 440-ac sec 35, J. Duncan sur, abnd 1186 ft.

Texas Co.'s Boddy 7, 276 ft fr sel 950 ft fr nel n-33½-ac tr, blk 44, Bacon sur, pump 63 bbls, 1094-98 ft, td 1108 ft.

Cooke County: Texas Co.'s Cooke 3, 2099 ft snl 3423 ft ewl, A. Patterson sur A-817, abnd 1303 ft.

Montague County—Bowers: Pace Pet. Co.'s Jones 1, 1286 ft snl 330 ft ewl R. H. Grimes sur A-288, pump 60 bbls, 2405-09 ft, td 2415 ft.

Montague County—Dodson: J. A. Chapman-Ed. McFarlin's Dodson 4, 822 ft nsl 3098 ft ewl of 435-ac tr, T. R. Jackson sur, flow 637 bbls, ½-in, 5135-61 ft, td 5226 ft, pb 5161 ft.

Montague County—Hildreth: Daube Bros.' Prestwood 2, 936 ft wel 330 ft snl of sw sec 56, W. T. Herrin sur, Bend 6123 ft, flow 1656 bbls, ½-in, perf 6205-52 ft, td 6525 ft.

C. H. Murdick et al's Walthall 1, 330 ft out se cor E. T. Ry. sec 51, A-249, elev 1066 ft, Bend 6087 ft, flow 375 bbls, ½-in, perf 6066-6248 ft, td 6275 ft.

Sinclair Prairie's Middleton 3, 365 ft snl 330 ft ewl ne E. T. Ry. sec 56, Bend 6043 ft, Barnett 6349 ft, Simpson 7150 ft, flow 2421 bbls, 1-in, perf 6038-6138 ft, td 7269 ft.

O. C. Whitaker Oil Co.'s Gadberry 2, 330 ft snl 1650 ft ewl s½ sec 56, J. A. Staley sur A-1381, Bend 6116 ft, flow 2646 bbls, ½-in, perf 6168-98 ft, td 6465 ft.

Wichita County: Cochran & Cain's Waggoner Est. 5-A, 930 ft nsl 1990 ft ewl HT&B sec 14, A-505, pump 10 bbls, 1850-65 ft.

Magnolia's Goins 14, 959 ft snl 1020 ft ewl sec 29, Red River Valley Lands, pump 4 bbls, td 1852 ft.

Texas Co.'s Waggoner Est 2-Q, 1010 ft snl 300 ft ewl GC&SF 20, A-606, pump 45 bbls, shot 20 qts 1901-11 ft, td 1915 ft.

Wichita County — Davidson: Consolidated Oil Co.'s Williams 1, 495 ft nsl 1678 ft wel blk 3, Cherokee CSL, Bend 5200 ft, Ellenburger 5317 ft, pump 132 bbls oil, 65 bbls wtr, 5317-37 ft, td 5346 ft.

Young County: Belfort Oil Co.'s J. A. Watson 1, 467 ft nsl 1434 ft ewl T&NO sec 7, A-1244, pump 25 bbls, shot 40 qts 3836-52 ft, td 3905 ft.

C. B. Christie et al's Primitive Baptist Church 3, 350 ft fr nel 2100 ft fr sel I. L. Hill sur A-126, flow 70 bbls, ½-in, shot 140 qts 3775-3825 ft.

Martin & Harvey's Daniel 5-A, 600 ft ewl 467 ft nsl n½ se sec 164, TE&L Co. sur, pump 3 bbls, 877-85 ft, td 900 ft.

Martin & Harvey's Daniel 6-A, 1000 ft ewl 467 ft nsl n½ se sec 164, TE&L Co. sur, pump 1 bbl, shot 10 qts 869-79 ft, td 888 ft.

Young County—Allar: Panhandle Ref. Co. et al's Allar-Hunt 18, 3080 ft snl 2979 ft wel of s-1185-ac sec 3409, TE&L Co. sur, flow 240 bbls, 14/64-in, 2726-40 ft.

Young County — Bunger - Mississippi: Deep Rock Oil Corp.'s Morrison 2, 330 ft out se cor, F. McLaurin sur A-211, Bend 3622 ft, Miss 4459 ft, Ellen 4578 ft, abnd 4585 ft.

Young County—Padgitt: R. C. Lipscomb et al's Scott 3, 1414 ft nsl 1404 ft ewl sec 335, TE&L Co. sur, Miss 4750 ft, abnd 4836 ft.

Wilbarger County: W. T. Waggoner Est.'s Fee 6-1, 505 ft nsl 947 ft ewl H&TC 33, blk 4, otd 2291 ft, water disposal well, td 2928 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Carl Childs et al's Bell 1, 200 ft snl 600 ft wel sec 14, blk 5, Clark-Plumb sur, abnd 1186 ft.

C. H. Featherstone et al's Kinder 1, 300 ft nsl 1496 ft wel sec 112, blk 4, Clark-Plumb sur, abnd 1303 ft.

Childress County—Failure: Humble's Bennett 1, e nw nw W&NW Ry. 773, blk H, elev 1924 ft, Mississippi 6990 ft, abnd 7037 ft.

Cooke County — Discovery: Northern Ordnance's Davis-Raney 1, 557 ft s 330 ft w of ne cor 76-ac lse, G. de los Santos sur A-894, 1¼ mi e by n of Woodbine, elev 749 ft, flow 110 bbls oil, 1.6% bs&w, 12/64-in, Strawn (Winger) 4349-57 ft.

Throckmorton County—Failure: Bruce Sullivan and Hooper & Byrne Corp.'s Bailes 1, 330 ft out ne cor sec 2108, TE&L Co. sur, Bend 4425 ft, Miss 4884 ft, Ellen 5157 ft, abnd 5270 ft.

Wichita County—Failure: Sohio's Nolen 1, 330 ft nsl 2315 ft wel, John Thomas sur A-283, elev 989 ft, KMA 4267 ft, Bend 5050 ft, Simpson 5300 ft, Ellen 5426 ft, abnd 5469 ft.

Wilbarger County — Failure: Texas Co.'s Bankers Life 1, 2000 ft snl 3300 ft ewl, John Cox sur A-541, abnd in Ellen 5537 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 180, 1320 ft nsl 440 ft ewl se I&GN 195, blk 3, pump 237 bbls, shot 300 qts 3139-93 ft.

Gray County: L. R. Hagy - Harrington-Marsh's Herber 4, 1890 ft nsl 660 ft ewl H&GN 184, blk B-2, pump 70 bbls, shot 120 qts 2852-83 ft, 240 qts 2850-2925 ft, td 2925 ft.

Texwell Oil Corp.'s Davidson 5, sw ne sw H&GN 65, blk B-2, 2,000,000 gas, 315 lbs, lime 2875-2940 ft.

Moore County: Shamrock O&G Co.'s Sneed 20, sec 14, blk 1, J. Poitevent sur, 35,500,000 gas, 315 lbs, 8000 gals acid 2685-2875 ft, td 3009 ft, pb 2975 ft.

Shamrock's Sneed 21, sec 15, blk 1, J. Poitevent sur, 41,500,000 gas, 317 lbs, 6250 gals acid 2686-3197 ft.

WYOMING

Converse County—Big Muddy: Continental's Whiteside 61, ne nw nw 9-33n-76w, swab 30 bbls 36.5-gr hr, Dakota 4213-38 ft, 7-in 4327 ft, perf 100 holes, td 4333 ft.

Park County—Elk Basin: Carter Oil Co.'s

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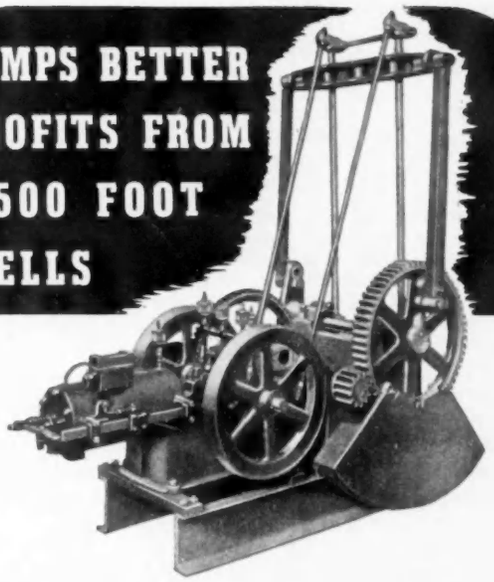


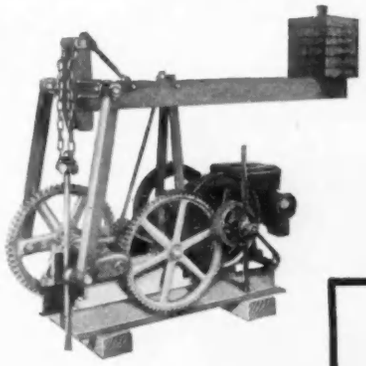
PATTIN'S COMBINATION 5 H. P. SINGLE WELL PUMPING POWER

Designed especially for oil country *heavy duty* and built complete by Pattin, this 5 H.P. unit sets over casing head, connected direct onto polish rod. 16" or 20" stroke. Built-in counter-balanced weights lighten load on gears, assisting smooth running. E. K. Wico ignition. Circulating water cooled. Runs on gas or gasoline—change over made without stopping. Weight 2,200.

LIGHT COMBINATION GEARED BEAM POWER — FOR 1,800 FOOT WELLS

•

SEE ACME-PATTIN LINE IN COMPOSITE CATALOG



Pattin designed, Pattin built, this unit has engine which develops 6 H.P. at 600 R.P.M. Fully counter-balanced with 6 special 100 lb. castings. Polish rod connected to beam with heavy chain. 17" Stroke, perfectly aligned—avoiding wear on stuffing box. Runs on gas or gasoline. Lever clutch. Weight complete, 1,800 lbs. Write for Complete Specifications.

FIGURE 103

Acme Wire Line Clamps

The Oil-World's "E" (Excellency in performance and stamina) is easily won by Acme's patented safety wire line drilling clamps. Write for full facts.

ACME FISHING TOOL COMPANY
Parkersburg, W. Va.

PATTIN BROTHERS DIVISION
OF ACME FISHING TOOL COMPANY
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EXPORT OFFICE — 19 RECTOR ST., NEW YORK (6), N. Y.

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liquid or paste . . . for
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A new approach to *water treating problems* for: Refineries • Recycling Plants • Gasoline Plants • Boilers • Circulating Systems • Towers • Condensers . . . all equipment requiring scientific water treatment.

PROOF: Fourteen years development on a new idea that is saving time, money, and trouble for leading companies.

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QUICK DELIVERIES ON
STEAM CONDENSERS
and
FEED WATER HEATERS

We deliver small condensers and feed water heaters built to your specifications in days instead of weeks or months.

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"Service, Not Promises"
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If your well is "off" here's something you can do about it. The Cavins Automatic Hydraulic Suction Bailer can make it jump back to normal immediately. Yes, let *Cavins Clean You Out of Trouble!*

THE CAVINS CORP.
HOUSTON, TEXAS
Branches: Dallas, Corpus Christi, Odessa, Pampa, Kilgore, Tyler, Lake Charles, La., Seminole, Okla., Ellenwood, Kan., Artesia, N. Mex.
CAVINS
OIL WELL CLEANOUT TOOLS

Henderson 1 "B," ne se se 31-58n-99w, flow 75 bbls hr, Tensleep 4607 ft, 7-in 4589 ft, td 4815 ft.

Park County—Oregon Basin: Ohio's Wilson 4 "A," nw sw sw 4-50n-100w, pump 75 bbls, Embar 3587 ft, 6⅝-in 3846 ft, perf 3588-3746 ft, td 3911 ft.

Sweetwater County—Lost Soldier: Sharples Corp.'s Good 2, nw nw se 3-26n-90w, pump 171 bbls, Tensleep 4730 ft, 7-in 4720 ft, td 5093 ft.

WYOMING WILDCATS

Big Horn County—Discovery: General Petroleum's Howell 1, Lot 63-56n-97w (approx sw se sec 32), Garland field, elev 4010 ft, swab 265 bbls 15 hrs fr Tensleep 4314-4436 ft, 7-in 4302 ft, top red beds 3505 ft.

Fremont County — Discovery: Stanolind's Shoshone-Arapaho 1, sw se sw 18-2n-1w, Winkleman dome, swab 40 bbls hr 26-gr, Tensleep 2878 ft, 7-in 2893 ft, td 3517 ft.

Park County—Failure: Stanolind's Unit 1, sw sw ne 34-48n-100w, Little Buffalo Basin, abnd 5776 ft.

Platte County—Failure: Glentop Exploration Co.'s Millikin 1, se se se 18-30n-67w, Glendo area, abnd 1335 ft red beds.

United States Wildcat Starts

ARKANSAS

Columbia County: Southward Oil Co.'s Pearce 1, c nw ne 10-18s-20w, outpost to Tide Water's Pearce 1, pool opener, lcn.

Miller County: K. E. Jennings & R. E. Stueber, Tr.'s Irene Offenhauser 1, c se ne sw 31-16-26, lcn.

Carter Oil Co.'s N. Carper et al 1, 345 s 365 e of nw cor ne nw 6-17-26, lcn.

Union County: Sam M. Richardson's Ed Doss 1, c sw ne 16-17-14, lcn.

CALIFORNIA

Fresno County: Texas Co.'s San Joaquin 1, sw se sw 11-15-17, Raisin City area, mim.

Imperial County: Pure's State 1, ne ne ne 26-10-9, Salton Sea area, lcn.

Kern County: Bandini Pet. Corp.'s Bacon 1, sw sw ne 27-28-20, Belridge area, lcn.

Continental's Easton 2, 330 ft e 660 ft n 8¼c 33-29-26, McClung area, rig.

Pacific Oil & Gas Dev. Co.'s CCMO 3, ne se sw 17-24-18, Pyramid Hills area, lcn.

Richfield's Tejon B-23-6, ne sw nw 6-11-18, Tejon Ranch area, mim.

Richfield's Goose Slough 1, nw nw ne 20-29-25, Rio Bravo area, lcn.

Solano County: Honolulu-Barnsdall's Liberty Farms 1, nw ne ne 18-5-3, Liberty Island area, gas test, lcn.

Tulare County: Amerada's Dinuba Comm. 1, sw sw ne 22-16-24, Kingsburg area, lcn.

Amerada's Dinuba Comm. 28-1, sw ne nw 28-16-24, Kingsburg area, rig.

COLORADO

Moffat County: Stanolind et al's Hanawalt 2, nw ne se 4-6n-92w, Bell Rock structure, mim 8000-ft test.

KANSAS

Butler County: Vickers' Price 1, sw ne se 25-29s-6e, lcn.

Cowley County: C. M. Boggs' Fee 1 sw se nw 29-34s-5e, dk.

Edwards County: Cities Service Trousdale 1, se se ne 18-25s-16w, dk.

Greenwood County: C. O. Whittaker et al's Snider 1, c w sw se 9-26s-10e, dr 1000 ft.

Havlic's Simple 1, c nw sw 27-26s-13e, lcn.

Morris County: A. M. Landon's White 1, c n nw nw 6-15s-6e, rust.

Pratt County: Ohio's Lemon 1, se ne se 25-27s-15w, dk.

Reno County: Phillips' Wenzel 1, ne se sw 15-26s-5w, rur.

Russell County: Texas Co.'s Beisel 1, ne ne se 6-14s-11w, lcn.

KENTUCKY

McLean County: Carter & Smith's O'McCurry 1, nw nw nw 16-N-24, lcn.

MICHIGAN

Newaygo County: Rex Oil & Gas Co.'s James 1, sw sw sw 3-15n-12w, rig.

Ottawa County: C. A. Perry's Bloemers 1, nw nw ne 11-6n-15w, lcn.

WEST TEXAS

Gaines County: Shell's T. K. Sparks 1, 660 ft snl 659 ft ewl ne PSL 3, blk A-13, lcn 8000-ft Clear Fork test.

Lamb County: Humble's Ingliss 1, c sw se sec 32, blk 1, R. M. Thompson sur, lcn 6000-ft test.

SOUTHWEST TEXAS

Duval County: Argo Oil Corp.'s Schaeffer 1, 1650-ac lse, George Rodet sur, 12 mi nw Benavides, lcn 4300-ft test.

Starr County: Sun's Salinas 1, 1112-ac lse, shares 48 & 85, porc 38 & 39, Ancient Juris de Reynosa Gr, lcn 5000-ft test.

LOWER TEXAS COAST

Bee County: Navarro Oil Co.'s Plummer 1, sw sw sec 31, F. J. Chessman sur, 1 mi nw Plummer, lcn 7250-ft test.

Jackson County: Stanolind's Four Way Ranch 2, 2970 ft fr el 3908 ft fr nl 1000-ac lse, J. K. Looney sur, 4 mi ne LaWard, lcn.

Jim Wells County: Southern Minerals' Luby 1, 951-ac lse, 4 mi e Alice, Los Presenos de Abajo Gr, lcn.

Karnes County: Magnolia's Russell-Atkinson 1, 1980 ft fr nwl 1880 ft fr swl 1240-ac lse, Carlos Martinez Gr, lcn 10,000-ft Wilcox test.

Live Oak County: Humble's Pace 2, 886-ac lse, John H. McMullen sur 15, 1 mi sw Mikeska, spud.

San Patricio County: Southern Minerals' Miller 1, 107-ac tr 18, s⅓ George Morris Lge, 4½ mi w Sinton, lcn 6700-ft test.

TEXAS GULF COAST

Hardin County: American Republics-Houston Oil's H&TC Fee 1, 44 ft fr sl 2350 ft fr el H&TC sur 189, lcn 7500-ft test.

Harris County: Wynn Crosby & Providence Oil Co.'s Blakely 1, 467 ft fr s&wl sec 3, HT&B sur sec 3, 5 mi nw Clodine, lcn 8000-ft test.

Liberty County: Humble's Boyt 1-D, Double Gum Bayou area, 1251-ac lse, P. O. Lewis sur, lcn 10,100-ft test.

Wharton County: Superior's Barker 1, 554-ac tr, John Huff sur, lcn 7000-ft test.

EAST TEXAS

Hopkins County: H. L. Hunt Oil Co.'s G. H. Marable 1, 1720 ft ewl 330 ft snl, J. C. Alexander sur, 6¾ mi sw Brashear, mim Paluxy test.

Houston County: John S. Ivy-W. T. Moran's G. M. Murray 1, 10,000 ft wel 1980 ft nsl (Trinity River), John Durst sur, lcn Wilcox test.

NORTH TEXAS

Archer County: H. D. Egger et al's Virgil Seay 1, 950 ft snl and 550 ft ewl sec 63, Harris subdvn, lcn 1100-ft test.

W. H. Peckham et al's C. S. Morris 1, 830 ft out se cor sec 140, Harris subdvn, lcn 1350-ft test.

Frank Wood et al's G. R. Campbell 1, 300 ft snl and 800 ft wel blk 4, Crawford Pasture subdvn, I. Holman sur, lcn 1400-ft test.

W. E. Stephens et al's Mrs. H. B. Adae 3, 660 ft out sw cor sec 7, Palo Pinto CSL sur, lcn 5000-ft Ellenburger test.

Cooke County: R. C. Lipscomb et al's J. G. Cannon 1, 700 ft from n/n/s and 2204 ft ewl J. F. Johns sur A-1569, lcn 1800-ft test.

Texas Co.'s H. H. Moss 1, 330 ft snl and 400 ft wel of Hiram Walker sur A-1082, dk for 2300-ft test.

Young County: Kerlyn Oil Co. et al's W. W. Cope 1, 330 ft out sw cor sec 1475, TE&L Co. sur, lcn 5400-ft Ellenburger test.

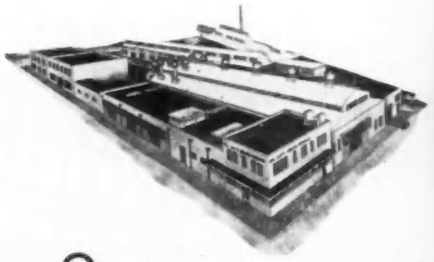
TEXAS PANHANDLE

Oldham County: Stanolind's C. E. & W. T. Herring 1, 1805 ft nsl 5368 ft ewl Lge 307, CSL sur, mim 6500-ft Ellenburger test.

WYOMING

Carbon County: Arp & Snively's Seaverson 1, sw se sw 30-18n-84w, Saratoga area, ru.

Fremont County: Stanolind's Shoshone-Arapahoe 2, sw nw ne 19-2n-1w, Winkleman dome, ru.



OUR NEW PLANT pictured above is devoted to the proposition that now, more than ever, manufacturers need a dependable sure source of smooth uninterrupted power.

To win America's "Battle of Production" more and more defense manufacturers are replacing less efficient types of bearing metals with BRONZOID. Its outstanding performance record gives positive insurance against costly breakdowns, expensive repairs.

Specify BRONZOID as your standard bearing bronze

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Here's

where you hook on for production

When you hook on to an Axelson Pump, production goes UP and troubles go DOWN. Axelson Pumps are built to get *maximum* capacity from any well, regardless of pumping conditions.

The secret of producing success is in steady performance day after day, month after month. This kind of service comes from pumping equipment designed and made right in every detail. Axelson Interchangeable Plunger Pumps go through countless machining and inspection operations to be sure they *are right*. The perfect performance of every part no matter how small is a "must" for Axelson Pumps

Axelson perfection, of course, didn't just happen. It results from more than half a century of constant research, testing, improving. Axelson originated interchangeable liner pumps and many other revolutionary improvements, and will continue to lead the way whenever successful experiment uncovers better methods or equipment for increased efficiency.

That is why Axelson Pumps are giving satisfactory service in principal producing fields throughout the world; and why you, too, will find it profitable to hook on to Axelson Pumps for top production.

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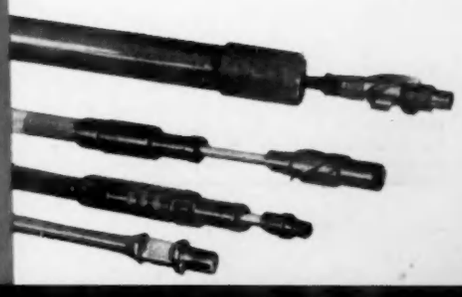
AXELSON

DEEP WELL PLUNGER PUMPS

AND SUCKER RODS



E SUN NEVER SETS
H AXELSON PUMPS

You're "Safe"
WHEN YOU CARRY A
90-UL ECOLITE

Don't wait—get this marvelous new safety lantern with broken bulb ejector right away.

SAFE in
HAZARDOUS PLACES

TESTED AND RECOMMENDED BY UNDERWRITERS' LABORATORIES

- Sealed beam construction.
- Throws bright beam 1500 feet.
- Large handle and pivoting feature gives you light where you need it and both hands free for work. Now at jobber and supply stores.

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Consulting Geophysicists

Specializing In Magnetic Surveys

Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique

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When you stop at The Roosevelt you don't risk getting marooned like this. For you'll be within walking range of Manhattan's Midtown activities. Direct passageway from Grand Central Terminal to hotel lobby. A reservation at The Roosevelt liquidates a lot of bother. *Rooms with bath from $4.50.*

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Robert P. Williford, General Manager
MADISON AVE. AT 45th ST., NEW YORK
—A Hilton Hotel—

OTHER HILTON HOTELS FROM COAST TO COAST:
TEXAS, Abilene, El Paso, Longview, Lubbock, Plainview; NEW MEXICO, Albuquerque; CALIFORNIA, Long Beach, Los Angeles, *The Town House*; MEXICO, Chihuahua, *The Palacio Hilton*. Hilton Hotels. C. N. Hilton, President.

Squeaks from the Bull Wheel

Speaking of Tax Vetoes

Once upon a time a farmer was driving a pair of mules. In order to go from one field to another he needed to let down some of the fence rails. While doing so he tied the reins around his waist. When the fence rails dropped the team started up, dragging the farmer over the stones and rubble. In the hospital he told the doctor:

"We hadn't gone ten feet before I seen my mistake."

Army Fun

Two American soldiers in Egypt lived for months on dehydrated beef, dehydrated milk, dehydrated butter and vegetables. Visiting a Cairo museum they saw their first mummy.

"This is going too far," said one. "Now they're dehydrating women!"

By Any Other Name

Visitor: (gazing at a historic building) "I think your porticoes are very well shaped."

Sweet Young Thing: "Yes, that's what all the fellows tell me, but that's a new name for them."

Not "Lend-Lease Papa"

The British barmaid was a flirt, and when the corporal went out to buy a paper she pursed her lips invitingly and leaned over the bar towards the shy young private.

Putting her face against his, she whispered: "Now's your chance, darling." The private looked around the empty room. "So it is," he remarked; and promptly drank the corporal's beer.

Not by Buffalo

A Swede walked into the ticket office and asked for a ticket to Chicago.

"Do you want to go by Buffalo?"

"My gudeness, no, ef Ay can't go by train geeve me reindeer."

Gymnastics

The drill sergeant was putting the rookie squad through calisthenics.

"Companeeeee, lift up your left leg and hold it straight out in front of you."

By mistake, one soldier held up his right leg, which brought it side by side with his neighbor's left leg.

"Aw right," shouted the sergeant when he noticed this, "who's the wise guy over there holding up both legs?"

Social Diplomacy

An English hostess when serving wine remarked to one gent, "I shouldn't be offering you wine, really. You are the head of the Temperance League, aren't you?" "Oh, no," he replied. "I'm head of the Vice League." "Well," said she, "I know there was something that I shouldn't offer you."

Rejected

Two wounded Marines were lying in adjoining beds in a Guadalcanal hospital. The mail arrived and each received a letter.

After reading his, the first Marine threw it to the floor. "Am I sore!" he exclaimed. "I just got a letter from my girl and she tells me she has married another guy."

"You're sore," screamed the second leatherneck. "I've just got a letter from my draft board, and it says they've rejected me."

Came in Second

Stephen Leacock, the humorist, tells how proud he was when he first got his Ph.D. and on his first trip to the Orient put himself down on the passenger list of the liner as "Dr. Leacock."

"I was just getting my things straightened out," he says, "when a steward knocked at my cabin door and asked, 'Are you Dr. Leacock? The Captain's compliments Doctor, and will you please come and have a look at the second stewardess leg?'

"I was off like a shot, realizing the obligations of a medical man. But I had no luck. Another fellow got there ahead of me. He was a Doctor of Divinity."

Court Procedure

Courtroom scene. Witness on the stand. Plaintiff's attorney points an accusing finger and shouts: "Did you, or did you not, visit the defendant at his home?"

"I did."

"Did you, or did you not, go there to ask him a question about this case?"

"I did."

"And what did he answer?"

The defendant's attorney leaped up to object to this question. The two lawyers wrangled for half an hour as to its admissibility. The judge had to decide, so he retired to his chambers for an hour's study of technical points and precedents. He finally returned, called the court to order, and ruled that the question was proper.

With a challenging and defiant sneer the question was repeated. "And what did he answer?"

"He wasn't to home."

Standco
NO-SMOKE

STANDCO BRAKE LINING

for the easiest brake known. It "feeds off" evenly. Standco never scores brake rims. See page 2808 Composite Catalog.

Standco Brake Lining Co.
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Every producer wants to make his wells more profitable.

We have worked and sweat over that same problem for 25 years.

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Only our customers believe that. But we expect it to interest YOU. We expect you to investigate. That's why we advertise—not to sell JENSEN Units, but to sell you the fact that you should investigate.

Please turn to our pages in your new Composite Catalog or write for Bulletin No. 27. Watch for JENSEN Units in the field and ask the field men what they think. Eventually you'll try a JENSEN Unit, and it will sell you other JENSEN Units. That is why we have come to be one of the world's largest exclusive manufacturers of pumping equipment.

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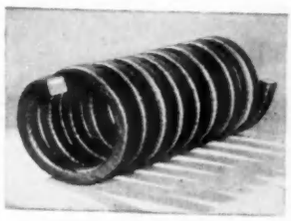
Win the War in Forty-Four!

Every day we are producing tons of GARLOCK Packings, Gaskets and KLOZURE Oil Seals for the U. S. Armed Forces and War Industries. Their dependable performance will help the effort of the United Nations to *win the war in '44*. Essential civilian industries are also being supplied with GARLOCK products to the limit of our capacity.



GARLOCK 150 Rod Packing for High Pressure Steam (Spiral form). Coil form—GARLOCK 125. Ring form—GARLOCK 200.

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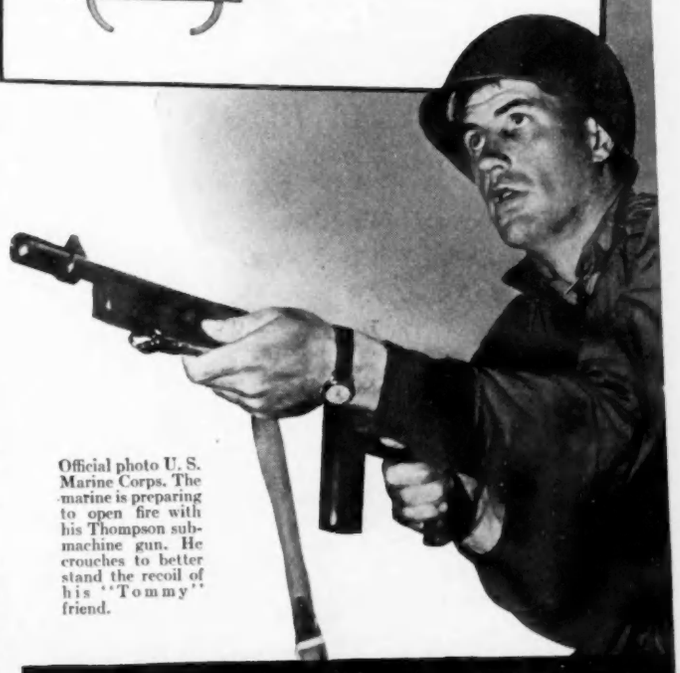

Official photo U. S. Marine Corps. The marine is preparing to open fire with his Thompson submachine gun. He crouches to better stand the recoil of his "Tommy" friend.

GARLOCK

→ The ←

Final Drive Demands

the utmost of boilers and tubes

"The Entirely Different Boiler and Engine Treatment"

Keep 'em Clean, that they deliver maximum power with minimum fuel consumption, less time out for shut downs, and longer equipment life.

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automatically removes and prevents scale and corrosion while your equipment operates.

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Complete practical experienced engineering service, including:

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Gas Measurements	**Compressor Plants**
Bottom-Hole Pressure	**Estimate of Results**
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Core Analysis	**Installation**
	Operation

We invite your inquiries and would like to cite you references and show you actual performance records.

PETROLEUM ENGINEER
JO H CABLE
WICHITA FALLS TEXAS

Men in the Industry's News

ROBERT B. MITCHELL has been made a partner with Foran, Boatright & Dixon, consulting petroleum and natural gas engineers, with headquarters in the Second National Bank Building, Houston. He formerly was division geologist in the Texas-Louisiana Gulf Coast Division of Stanolind Oil & Gas Company, and has been associated with Foran, Boatright & Dixon for a year.

A. P. HALL has been appointed assistant general manager of sales of American Chain & Cable Company, effective March 1, with headquarters at 230 Park Avenue, New York. Hall has been with Bethlehem Steel Company since 1922, having served first in the operating department and in the sales department since 1925, and has been assistant manager of sales at New York since March 1, 1938.

ROBERT B. CAMPBELL, formerly West Texas Division Geologist for Humble Oil & Refining Company and now a consulting geologist in Florida, was elected to the vice presidency of the Southeastern Geological Society at its organization meeting October 18, in Tallahassee. His 11 years activities in Florida make him the "dean" of petroleum geologists in that state.

BEAUFORD H. JESTER, chairman of the Texas Railroad Commission, who is serving an unexpired term, has announced as a candidate to succeed himself.

JOHN R. SCOTT, former district manager of the land and lease department of Skelly Oil Company, at Shreveport, has joined the petroleum department of Republic National Bank at Dallas.

GLEN C. WOOLEY, district geologist and land man in Kansas for Transwestern Oil Company, has been transferred to Jackson, Mississippi, and has been succeeded at Wichita by Frank Mittner.

JOE C. KAHL, Carter Oil Company statistician at Tulsa, has been transferred to Casper, Wyoming, to open a scouting office for the company.

W. T. PAYNE of the Big Chief Drilling Company, has been named chairman of the Oil & Gas Committee of the Oklahoma Chamber of Commerce.

BOB GILMOUR, vice president of Cardwell Manufacturing Company, Wichita, is touring South American oil districts and expects to be absent two months.

H. H. BUCHANAN has been appointed general sales manager for La Plant-Choate Manufacturing Company, Cedar Rapids, Iowa. He has had wide experience in distribution of equipment in the United States, Canada and Latin America. He has been associated with the company since 1939.

The company manufactures earth-moving and land-clearing equipment for Caterpillar-built tractors.

HOWARD BRADLEY, formerly with Ed J. Kubat, has joined Phillips Petroleum Corporation, Oklahoma City, as Chief Scout. Stewart McChesney is now seismograph and land scout for the same company.

WILLIAM WATSON has been appointed district manager for Chain Belt Company with headquarters at Houston, succeeding L. C. Bendit, who resigned to enter business for himself. Watson formerly was with Texas Rubber & Specialty Company, Phillips Petroleum Company and D & M Machine Works.

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